

	L #	Hits	Search Text	DBs	Time Stamp
1	L1	388	galactosyltransferase\$1 or galactosyl adj transferase\$1	USPAT; US-PGPUB	2002/06/12 15:59
2	L2	5171	gb3 or cd77 or globotriaosylceramide	USPAT; US-PGPUB	2002/06/12 16:00
3	L4	0	2 adj synthase\$1	USPAT; US-PGPUB	2002/06/12 16:00
4	L3	11	1 and 2	USPAT; US-PGPUB	2002/06/12 16:01

PGPUB-DOCUMENT-NUMBER: 20020058254  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020058254 A1

TITLE: Screening methods for enzymes and enzyme kits

PUBLICATION-DATE: May 16, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	

US-CL-CURRENT: 435/6,435/455 ,435/7.1

ABSTRACT:

Recombinant enzyme libraries and kits where a plurality of enzymes are each characterized by different physical and/or chemical characteristics and classified by common characteristics. The characteristics are determined by screening of recombinant enzymes expressed by a DNA library produced from various microorganisms. Also disclosed is a process for identifying clones of a recombinant library which express a protein with a desired ctivity by screening a library of expression clones randomly produced from DNA of at least one microorganism, said screeing being effected on expression products of said clones to thereby identify clones which express a protein with a desired activity. Also disclosed is a process of screening clones having DNA from an uncultivatedmicroorganism for a specified protein activity by screening for a specified protein activity in a library of clones prepared by (i) recovering DNA from a DNA population derived from at least one uncultivated microorganism; and (ii) transforming a host with recovered DNA to produce a library of clones which is screened for the specified protein activity.

DATE FILED: January 2, 2001

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
US	PCT/US96/11854	1996US-PCT/US96/11854	July 17, 1996

----- KWIC -----

DETX:

[0193] d. Glycoside synthesis using UDP-galactosyl transferase

DETL:

19TABLE 4 23 wherein R = 4-methyl umbelliferone G2 .beta.-D-galactose  
.beta.-D-glucose .beta.-D-glucoronide **GB3** .beta.-D-celotrioside  
.beta.-B-cellobiopyranoside GC3 .beta.-D-galactose .alpha.-D-galactose GD3

.beta.-D-glucose .alpha.-D-glucose GE3 .beta.-D-glucoronide GI3  
.beta.-D-N,N-diacetylchitobiose GJ3 .beta.-D-fucose .alpha.-L-fucose  
.beta.-L-fucose GK3 .beta.-D-mannose .alpha.-D-mannose non-Umbelliferyl  
substrates GA3 amylose [polyglucan .alpha.1,4 linkages], amylopectin  
[polyglucan branching .alpha.1,6 linkages] GF3 xylan [poly 1,4-D-xylan] GG3  
amylopectin, pullulan GH3 sucrose, fructofuranoside

PGPUB-DOCUMENT-NUMBER: 20020051987  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020051987 A1

TITLE: Enzyme kits and libraries

PUBLICATION-DATE: May 2, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Short, Jay M.	Rancho Santa Fe	CA	US	

US-CL-CURRENT: 435/6,435/455 ,435/7.21

ABSTRACT:

Recombinant enzyme libraries and kits where a plurality of enzymes are each characterized by different physical and/or chemical characteristics and classified by common characteristics. The characteristics are determined by screening of recombinant enzymes expressed by a DNA library produced from various microorganisms.

DATE FILED: May 18, 2001

----- KWIC -----

BSTX:

[0140] d. Glycoside synthesis using UDP-galactosyl transferase

DETL:

5TABLE 4 28 4-methyl umbelliferone wherein R = G2 .beta.-D-galactose  
.beta.-D-glucose .beta.-D-glucuronide GB3 .beta.-D-cellobioside  
.beta.-B-cellobiopyranoside GC3 .beta.-D-galactose .alpha.-D-galactose GD3  
.beta.-D-glucose .alpha.-D-glucose GE3 .beta.-D-glucuronide GI3  
.beta.-D-N,N-diacetylchitobiose GJ3 .beta.-D-fucose .alpha.-L-fucose  
.beta.-L-fucose GK3 .beta.-D-mannose .alpha.-D-mannose non-Umbelliferyl  
substrates GA3 amylose [polyglucan .alpha.1,4 linkages], amylopectin  
[polyglucan branching .alpha.1,6 linkages] GF3 xylan [poly 1,4-D-xylan] GG3  
amylopectin, pullulan GH3 sucrose, fructofuranoside

US-PAT-NO: 6335170

DOCUMENT-IDENTIFIER: US 6335170 B1

TITLE: Gene expression in bladder tumors

DATE-ISSUED: January 1, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Orntoft; Torben F.	DK 8230 Aabyhoj	N/A	N/A	DKX

US-CL-CURRENT: 435/6,435/91.1 ,435/91.2 ,536/23.1 ,536/24.3 ,536/24.31  
,536/24.33

ABSTRACT:

Methods for analyzing tumor cells, particularly bladder tumor cells employ gene expression analysis of samples. Gene expression patterns are formed and compared to reference patterns. Alternatively gene expression patterns are manipulated to exclude genes which are expressed in contaminating cell populations. Another alternative employs subtraction of the expression of genes which are expressed in contaminating cell types. These methods provide improved accuracy as well as alternative basis for analysis from diagnostic and prognostic tools currently available.

21 Claims, 24 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 15

DATE FILED: February 22, 2000

----- KWIC -----

DETL:

D26599\_at Human mRNA for proteasome subunit "HsC7-I," complete cds 387 269  
352 358 375 557 D26600\_at Human mRNA for proteasome subunit "HsN3," complete  
cds 70 218 251 178 184 281 D28114\_at Human mRNA for MOBP (myelin-associated  
oligodendrocytic basic "protein)," complete "cds," clone hOPRP2 58 65 136 46  
135 181 D28118\_at Human mRNA for "DB1," complete cds 27 20 46 65 20 20  
D28124\_at Human mRNA for unknown "product," complete cds 552 580 314 348 485  
442 D28137\_at Human mRNA for "BST-2," complete cds 176 64 342 196 168 195  
D28235\_s\_at Humsn PTGS2 gene for prostaglandin endoperoxide "synthase,"  
complete cds 47 37 41 55 20 33 D28364\_at Human mRNA for annexin "II," 5'UTR  
(sequence from the 5'cap to the start codon). /gb=D28364 /ntype=RNA 209 29 83  
46 128 47 D28383\_at Human mRNA for ATP synthase B "chain," 5'UTR (sequence  
from the 5'cap to the start codon). /gb=D28364 /ntype=RNA 219 87 20 218 726  
343 D28416\_at Human mRNA for esterase "D," 5'UTR (sequence from the 5'cap to  
the start codon). /gb=D28416 /ntype=RNA 301 182 223 185 354 195 D28423\_at  
Human mRNA for pre-mRNA splicing factor "SRp20," 5'UTR (sequence from the  
5'cap to the start cadon). /gb=D28423 /ntype=RNA 241 91 260 259 55 312  
D28473\_s\_at Human T-lymphocyte mRNA for isoleucyl-tRNA "synthetase," complete  
cds 58 115 257 104 20 139 D28476\_at Human mRNA for KIAA0045 "gene," complete  
cds 76 69 204 45 58 20 D28483\_at Human scr3 mRNA for RNA binding protein  
"SCR3," complete cds 87 44 20 76 215 134 D28532\_at Human mRNA for renal  
Na+-dependent phosphate "cotransporter," complete cds 89 73 36 31 40 69

D28539\_s\_at Human mRNA for metabotropic glutamate receptor subtype "5b," complete cds 20 20 20 20 20 20 D28588\_at Human mRNA for KIAA0048 "gene," complete cds 39 34 180 20 20 41 D28589\_at Human mRNA "(KIAA00167)," partial sequence. /gb=D28589 /ntype=RNA 20 20 20 104 20 38 D28791\_at Human PIG-A "gene," 5'flanking region and 24 20 29 26 41 20 D28915\_at Human gene for hepatitis C-associated microtubular aggregate protein p44 65 125 50 28 66 154 D29012\_at Human mRNA for proteasome subunit "y," complete cds 600 628 441 463 895 854 D29013\_at Human mRNA for DNA polymerase "beta," complete cds 71 63 48 140 110 171 D29640\_s\_at Human mRNA for KIAA0051 "gene," complete cds 45 32 227 202 137 41 D29641\_at Human mRNA for KIAA0052 "gene," partial cds 98 77 42 51 22 20 D29642\_at Human mRNA for KIAA0053 "gene," complete cds 78 36 20 30 20 79 D29643\_at Human mRNA for KIAA0115 "gene," complete cds 221 120 273 237 208 72 D29875\_at 20 20 20 20 243 51 D29675\_s\_at Human inducible nitric oxide synthase "gene," promoter and exon 1 /gb=D29675 /ntype=DNA /annot=exon 65 93 75 121 705 111 D29677\_at Human mRNA for KIAA0054 "gene," complete cds 20 20 20 20 20 20 D29805\_at Human mRNA for "beta-1,4-galactosyltransferase," complete cds 291 77 171 116 96 82 D29810\_at Human mRNA for unknown "product," partial cds 29 20 20 20 20 53 D29833\_at Human mRNA for salivary protein rich peptide "P-B," complete cds 50 20 20 28 46 97 D29954\_at Human mRNA for KIAA0056 "gene," partial cds 159 120 203 146 449 397 D29956\_at Human mRNA for KIAA0055 "gene," complete cds 20 49 21 74 20 55 D29958\_at Human mRNA for KIAA0116 "gene," partial cds 63 39 20 88 33 45 D29963\_at Human SFA-1 (a member of transmembrane 4 superfamily) "mRNA," complete cds 277 482 415 445 475 331 D29992\_at Human mRNA for placental protein 5 "(PP5)," complete cds 20 20 20 20 35 20 D30036\_at Human mRNA for phosphatidylinositol transfer protein "(PI-TPalpha)," complete cds 20 33 20 20 20 20 D30037\_at Human mRNA for phosphatidylinositol transfer protein "(PI-TPbeta)," complete cds 85 41 49 44 105 45 D30655\_at Human mRNA for eukaryotic initiation factor 4AII 391 728 949 878 315 614 D30715\_xpt5\_s\_at exon2s from Human PAP (pancreatitis-associated protein) "gene," 5'-flanking region. /gb=D30715 /ntype=DNA /annot=exon 20 65 20 27 76 125 D30742\_at Human mRNA for calmodulin-dependent protein kinase "IV," complete cds 20 20 20 20 20 20 D30755\_at Human mRNA for KIAA0113 "gene," partial cds 66 116 20 78 127 20 D30756\_at Human mRNA for KIAA0049 "gene," complete cds 106 84 109 103 195 107 D30758\_at Human mRNA for KIAA0050 "gene," complete cds 139 198 81 124 75 211 D31628\_s\_at Human gene for 4-hydroxyphenylpyruvic acid dioxygenase "(HPD)," complete cds 25 20 72 21 115 140 D31716\_at Human mRNA for GC box binding "protein," complete cds 70 33 45 22 20 77 D31762\_at Human mRNA for KIAA0057 "gene," complete cds 20 20 20 20 20 20 D31763\_at Human mRNA for KIAA0065 "gene," partial cds 48 35 68 34 20 76 D31784\_at Human mRNA for KIAA0064 "gene," complete cds 117 57 20 20 20 80 D31765\_at Human mRNA for KIAA0061 "gene," partial cds 240 172 293 210 265 301 D31766\_at Human mRNA for KIAA0060 "gene," complete cds 138 85 162 157 397 20 D31767\_at Human mRNA for KIAA0058 "gene," complete cds 236 205 620 209 395 204 D31784\_at Human mRNA for cadherin-6 44 20 20 20 20 20 D31797\_at Human CD40 ligand (CD40L) "gene," 5'flanking region and 20 46 35 20 20 46 D31815\_at Human mRNA for SMP-30 (senescence marker "protein-30)," complete cds 20 43 20 20 20 67 D31833\_s\_at Humsn mRNA for vasopressin V1b "receptor," complete cds 20 20 20 20 20 20 D31840\_s\_at Human DRPLA mRNA for "ORF," complete cds 20 20 54 71 20 20 D31846\_at Human gene for aquaporin-2 water "channel," "exon1-4," complete cds 402 424 353 370 870 594 D31883\_at Human mRNA for KIAA0059 "gene," complete cds 567 431 341 210 344 20 D31884\_at Human mRNA for KIAA0063 "gene," complete cds 209 191 143 182 342 257 D31885\_at Human mRNA for KIAA0069

"gene," partial cds 76 103 393 205 282 182 D31886\_at Human mRNA for KIAA0066  
 "gene," partial cds 20 20 20 20 20 20 D31887\_at Human mRNA for KIAA0062  
 "gene," partial cds 83 20 100 20 97 20 D31888\_at Human mRNA for KIAA0071  
 "gene," partial cds 56 28 62 20 199 20 D31889\_at Human mRNA for KIAA0072  
 "gene," partial cds 33 29 35 20 158 50 D31890\_at Human mRNA for KIAA0070  
 "gene," partial cds 135 186 267 218 55 188 D31891\_at Human mRNA for KIAA0067  
 "gene," complete cds 99 64 79 145 328 309 D31897\_at Human mRNA for Doc2  
 (Double "C2)," complete cds 141 25 27 125 188 66 D32001\_at Human HuSAA1g  
 gene for serum amyloid A1 "gamma," exon 3 and intron 3 86 37 95 41 165 153  
 D32002\_s\_at Human mRNA for nuclear cap binding "protein," complete cds 20 20  
 20 20 20 20 D32050\_at Human mRNA for alanyl-tRNA "synthetase," complete cds  
 41 166 268 111 154 122 D32129\_f\_at Human mRNA for HLA class-1 (HLAA-A26)  
 heavy "chain," complete cds (clone cMY-1) 753 1884 1462 1368 405 1528  
 D32202\_at Human mRNA for alpha 1C adrenergic receptor isoform "2," complete  
 cds 44 20 20 20 84 82 D37781\_s\_at Human mRNA for protein-tyrosine phosphatase  
 "HPTPeta," complete cds 20 20 20 20 20 20 D37931\_at Human mRNA for RNase "4,"  
 complete cds 41 70 68 107 161 101 D37965\_at Human mRNA for PDGF receptor  
 beta-like tumor suppressor "(PRLTS)," complete cds 20 20 20 20 20 33  
 D37984\_s\_at Human mRNA for DNA helicase "Q1," partial cds 20 20 29 20 39 20  
 D38024\_at Human facioscapulohumeral muscular dystrophy (FSHD) gene "region,"  
 D4Z4 tandem repeat unit 20 20 20 20 328 80 D38037\_at Human mRNA for  
 FK506-binding protein 12kDa (hFKBP-12) "homologue," complete cds 20 20 20 20  
 52 24 D38047\_at Human mRNA for 26S proteasome subunit "p31," complete cds 481  
 298 527 541 347 700 D38048\_at Human mRNA for proteasome subunit "z," complete  
 cds 264 173 196 131 20 138 D38073\_at Human mRNA for hRlf beta subunit (p102  
 "protein)," complete cds 44 84 95 97 31 116 D38076\_at Human mRNA for RanBP1  
 (Ran-binding protein "1)," complete cds 106 134

#### DETL:

protein "P5," complete cds 83 92 219 109 20 80 D49490\_at Human mRNA for  
 protein disulfide isomerase-related protein "(PDIR)," complete cds 148 73 20  
 20 143 20 D49493\_at Human gene for human bone morphogenetic protein-3b 20 59  
 20 20 20 125 D49677\_at Human U2AF1-RS2 "mRNA," complete cds 20 20 20 20 20  
 20 D49728\_at Human NAK1 mRNA for DNA binding "protein," complete cds 37 112  
 367 118 793 407 D49738\_at Human cytoskeleton associated protein (CG22)  
 "mRNA," complete cds 114 186 322 113 160 242 D49742\_at Human mRNA for HGF  
 activator like "protein," complete cds 20 20 20 20 20 20 D49817\_at Human  
 mRNA for fructose "6-phosphate,2-kinase/fructose" "2,6-bisphosphatase,"  
 complete cds 20 59 20 20 22 20 D49818\_at Human mRNA for fructose  
 "6-phosphste,2-kinase/fructose" "2,6-bisphosphatase," partial cds 170 46 181  
 123 211 55 D49824\_at 20 20 20 20 20 20 D49824\_s\_at Human HLA-B null allele  
 mRNA 2821 3076 5271 4505 776 3898 D49950\_at Human Liver mRNA for  
 interferon-gamma inducing "factor(IGIF)," complete cds 126 25 20 20 20 20  
 D49958\_at Human fetus brain mRNA for membrane glycoprotein "M6," complete cds  
 55 20 20 20 105 24 D50063\_at Human mRNA for proteasome subunit p40 / Mov34  
 "protein," complete cds 108 183 198 190 400 261 D50310\_at Human mRNA for  
 cyclin "I," complete cds 247 325 237 161 143 221 D50312\_at Human mRNA for  
 "uKATP-1," complete cds 20 20 20 20 20 20 D50370\_at Human mRNA for  
 nucleosome assembly "protein," complete cds 20 37 20 20 20 41 D50402\_at  
 Human mRNA for "NRAMP1," complete cds 20 20 20 20 189 20 D50405\_at Human  
 mRNA for RPD3 "protein," complete cds 137 148 158 135 20 67 D50477\_s\_at  
 Human mRNA for mambrane-type matrix metalioproteinase "3," complete cds 32 20  
 105 20 356 21 D50487\_at Human mRNA for RNA helicase "(HRH1)," complete cds 20

20 20 38 30 20 D50495\_at Human mRNA for transcription elongation factor  
 "S-II," "hS-II-T1," complete cds 20 20 20 20 20 20 D50525\_at Human mRNA for  
 TI-227H. /gb=D50525 /ntype=RNA 35 55 233 83 26 109 D50532\_at Human mRNA for  
 macrophage lectin "2," complete cds 20 20 20 20 20 20 D50550\_at Human LLGL  
 "mRNA," complete cds 37 20 20 20 20 20 D50582\_at Human gene for inward  
 rectifier K "channel," complete cds 73 48 27 48 20 178 D50640\_at Human DNA  
 for phosphodiesterase 3B 20 95 32 20 151 29 D50645\_at Human mRNA for "SDF2,"  
 complete cds 20 44 89 72 44 36 D50663\_at Human mRNA for TCTEL1 "gene,"  
 complete cds 199 269 210 211 102 350 D50678\_at Human mRNA for apolipoprotein  
 E receptor "2," complete cds 25 20 20 20 20 20 D50683\_at Human mRNA for  
 TGF-beta1R "alpha," complete cds 100 120 20 95 74 42 D50692\_at Human mRNA  
 for c-myc binding "protein," complete cds 136 31 87 111 292 190 D50810\_at  
 Human mRNA for placental leucine "aminopeptidase," complete cds 68 20 115 30  
 273 20 D50840\_at Human mRNA for ceramide "glucosyltransferase," complete cds  
 851 209 462 180 54 177 D50855\_s\_at Human mRNA for Ca-sensing "receptor,"  
 complete cds 39 88 64 20 170 114 D50857\_at Human DOCK180 protein "mRNA,"  
 complete cds 47 84 166 96 226 121 HG1877-HT1917\_s\_at Myelin Basic "Protein,"  
 Alt. Splice Form 4 20 20 48 20 20 20 HG1879-HT1919\_at Ras-Like Protein Tc10  
 28 96 69 20 20 108 HG1980-HT2023\_at "Tubulin," Beta 2 903 1132 2507 1529  
 844 1006 HG1996-HT2044\_at Guanine Nucleotide-Binding Protein "Rap2,"  
 Ras-Oncogene Related 20 20 20 20 20 20 HG2007-HT2056\_s\_at Proto-Oncogene  
 "Sno," Alt. Splice N 20 20 27 26 20 20 HG2028-HT2082\_at Laminin, A  
 Polypeptide 85 33 35 49 73 146 HG2036-HT2090\_at Stimulatory Gdp/Gtp Exchange  
 Protein For C-Ki-Ras P21 And Smg P21 100 20 20 20 334 25 HG2059-HT2114\_at  
 Arrestin, Beta 2 38 78 25 21 20 50 HG2075-HT2137\_s\_at Camp-Responsive  
 Element "Modulator," Alt. Splice 1 20 20 20 20 37 20 HG2090-HT2152\_s\_at  
 External Membrane "Protein," 130 Kda (Gb:Z22971) 55 132 109 31 20 134  
 HG210-HT210\_s\_at Galactokinase 2 33 83 83 72 170 99 HG213-HT2208\_f\_at  
 Beta-1-Glycoprotein "1," Pregnancy-Specific (Gb:M25384) 20 20 20 20 20 20  
 HG2147-HT2217\_at Mucin "3," Intestinal (Gb:M55405) 724 1428 1745 1308 1593  
 684 HG2147-HT2217\_r\_at Mucin "3," Intestinal (Gb:M55405) 20 20 50 20 1614  
 541 HG2148-HT2218\_f\_at Mucin "3," Intestinal (Gb:M55406) 36 70 133 51 184 84  
 HG2149-HT2219\_at Mucin (Gb:M57417) 22 42 256 20 479 186 HG2152-HT2222\_at  
 Zinc Finger Protein 92 20 20 20 20 20 20 HG2157-HT2227\_at Mucin "4,"  
 Tracheobronchial 20 20 20 20 258 61 HG2160-HT2230\_at 20 20 20 20 20 20  
 HG2161-HT2231\_at Translocation-Associated Notch (Drosophila) Homolog 1 20 20  
 20 20 20 20 HG2167-HT2237\_at Protein Kinase "Ht31," Camp-Dependent 99 95 64  
 143 20 76 HG2171-HT2241\_at 12-Lipoxygenase 20 20 20 20 20 20  
 HG2171-HT2241\_r\_at 12-Lipoxygenase 20 20 20 20 20 20 HG2175-HT2245\_s\_at  
 "Myosin," Heavy Polypeptide "10," Non-Muscle 36 20 78 20 20 20  
 HG2188-HT2258\_at Paired Box Hup1 (Gb:X15042) 20 20 20 20 20 20  
 HG2190-HT2260\_at Crystallin, Beta B3 (Gb:X15144) 20 20 20 20 49 20  
 HG2191-HT2261\_at Crystallin, Beta B3 (Gb:X15145) 20 24 20 20 20 20  
 HG2197-HT2267\_s\_at "Cottage," Type "VII," Alpha 1 20 99 155 111 696 224  
 HG2228-HT2305\_at Crystallin, Beta B 20 20 20 20 20 20 HG2229-HT2308\_at  
 Paired Box Hup1 (Gb:X15250) 20 20 20 20 20 20 HG2238-HT2321\_s\_at Nuclear  
 Mitotic Apparatus Protein "1," Alt. Splice Form 2 40 31 296 436 786 256  
 HG2239-HT2324\_at Potassium Channel Protein (Gb:Z11585) 20 20 20 20 20 84  
 HG2239-HT2324\_r\_at Potassium Channel Protein (Gb:Z11585) 41 20 138 93 1169  
 375 HG2247-HT2332\_at Major Intrinsic Protein 20 20 20 20 20 20  
 HG2255-HT2344\_f\_at Phosphoribosyl Pyrophosphate "Synthetase," Subunit Iii 20  
 20 20 20 20 44 HG2259-HT2348\_s\_at "Tubulin," Alpha "1," isoform 44 20 20 20  
 20 20 20 HG2260-HT2349\_s\_at Duchenne Muscular Dystrophy Protein (Dmd) 20 20



20 20 81 20 HG2261-HT2351\_s\_at "Antigen," Prostate "Specific," Alt. Splice  
 Form 2 20 20 20 20 55 27 HG2261-HT2352\_at Antigen, Prostate "Specific," Alt.  
 Splice Form 3 20 20 20 20 30 20 HG2264-HT2360\_at Alpase, Ca2+  
 "Transporting," Plasma Membrane "1," Alt. Splice 6 180 26 20 103 400 326  
 HG2271-HT2367\_at 20 20 20 20 20 21 HG2271-HT2367\_s\_at Profilaggrin 20 20  
 20 20 20 20 HG2274-HT2370\_at Rna Polymerase "II," 14.5 Kda Subunit 86 98 20  
 51 20 90 HG2279-HT2375\_at Triosephosphate isomerase 1112 872 1858 1837 788  
 910 HG2280-HT2376\_at D-Amino-Acid Oxidase 176 102 232 121 201 153  
 HG2290-HT2386\_at Calcitonin 71 20 20 20 25 20 HG2309-HT2405\_at Insulin-Like  
 Growth Factor Ib 20 20 20 20 20 20 HG2314-HT2410\_at  
 4-Beta-Galactosyltransferase 20 20 20 20 20 57

DETL:

20 20 20 20 104 20 M36072\_at Human ribosomal protein L7a (surf 3) large  
 subunit "mRNA," complete cds 2150 3875 4953 4145 1479 1748 M36089\_at Human  
 DNA-repair protein (XRCC1) "mRNA," complete cds 99 161 232 107 350 293  
 M36118\_s\_at Human cytotoxin serine protease-C "mRNA," complete cds 20 20 31  
 20 20 93 M36200\_at Human synaptobrevin 1 (SYB1) gene 53 166 100 43 56 142  
 M36205\_at Human syntaptobrevin 2 (SYB2) gene 22 20 20 36 20 20 M36284\_s\_at  
 Human glycoporphin C "mRNA," complete cds 59 104 20 20 20 20 M36341\_at Human  
 ADP-ribosylation factor 4 (ARF4) "mRNA," complete cds 225 225 402 212 198 98  
 M36429\_s\_at Human transducin beta-2 subunit "mRNA," complete cds 91 20 193  
 180 107 59 M36430\_s\_at human transducin beta-1 subunit "mRNA," 3' end 118 118  
 269 335 45 265 M36542\_s\_at Human lymphoid-specific transcription factor  
 "mRNA," complete cds 63 20 263 208 20 20 M36634\_at Human vasoactive  
 intestinal peptide (VIP) "mRNA," complete cds 20 38 20 29 20 20 M36653\_s\_at  
 Human 2-Oct factor "mRNA," complete cds 20 20 20 20 20 20 M36803\_at Human  
 hemopexin gene 20 20 20 20 20 20 M37033\_at Human CD53 glycoprotein "mRNA,"  
 complete cds 229 393 461 275 265 581 M37075\_at Human embryonic/atrial myosin  
 light chain (MLC-1-emb/A isoform) gene 20 20 20 20 20 20 M37104\_at Human  
 mitochondrial ATPase coupling factor 6 subunit (ATP5A) "mRNA," complete cds 338  
 111 241 175 188 144 M37190\_at Human ras inhibitor "mRNA," 3' end 50 120 20  
 20 70 81 M37197\_at Human CCAAT-box-binding factor (CBF) "mRNA," complete cds  
 82 66 115 83 20 67 M37238\_s\_at Human phospholipase C "mRNA," complete cds 33  
 57 281 144 20 43 M37245\_at Human Ig superfamily cytotoxic  
 T-lymphocyte-associated protein (CTLA-4) gene 46 186 91 41 305 316  
 M37271\_s\_at Human CD7 antigen "gene," exons 4-Jan 20 20 20 20 20 20  
 M37400\_at Human cytosolic aspartate aminotransferase "mRNA," complete cds 35  
 20 20 20 20 20 M37435\_at Human macrophage-specific colony-stimulating factor  
 (CSF-1) "mRNA," complete cds 197 181 163 152 605 420 M37457\_at 168 257 323  
 190 361 134 M37457\_s\_at Human "Na+,K+" #NAME? catalytic subunit alpha-III  
 isoform gene 20 20 20 20 20 20 M37485\_cds1\_at IGH@ gene (Ig Dxp heaavy-chain  
 gene) extracted from Human Ig germline H-chain D-refion Dxp 1 and Dxp'1  
 "genes," 3' end 20 20 20 20 38 29 M37583\_at Human histone (H2AZ) "mRNA,"  
 complete cds 288 108 359 240 41 349 M37712\_at Human p58/GTA  
 (galactosyltransferase associated protein kinase) "mRNA," complete cds 20 20  
 29 25 20 20 M37721\_at Human peptidylglycine alpha-amidating monooxygenase  
 "mRNA," complete cds 122 88 96 44 20 98 M37755\_f\_at Human pregnancy-specific  
 beta 1-glycoprotein gene PSGGA 34 84 162 81 265 24 M37763\_at Human  
 neurotrophin-3 (INT-3) "gene," complete cds 31 20 36 45 20 142 M37766\_at  
 Human MEM-102 glycoprotein "mRNA," complete cds 69 302 48 49 78 229  
 M37815\_cds1\_at Human T-cell membrane glycoprotein CD28 mRNA, exon 4 20 54 20  
 48 212 172 M37825\_at Human fibroblast growth factor05 (FGF-5) "mRNA,"

complete cds 70 99 36 67 24 120 M37981\_at Human alpha-3 neuronal nicotinic  
 acetylcholine receptor subunit "mRNA," complete cds 20 31 20 20 20 20  
 M37984\_ma1\_at Human slow wtitch skeletal muscle/cardiac muscle troponin C  
 gene, complete cds 267 225 406 237 207 370 M38180\_ma1\_at Human  
 3-beta-hydroxysteroid dehydrogenase/delta-5-delta-4-isomerase (3-beta-HSD)  
 "gene," complete cds 20 20 22 20 20 20 M38258\_at Human retinoic acid receptor  
 gamma 1 "mRNA," complete cds 53 20 20 69 179 68 M38449\_s\_at Human  
 transforming growth factor-beta "mRNA," complete "cds," clone pTGF-beta-trp114  
 101 33 108 24 159 191 M38591\_at Homo sapiens cellular ligand of annexin II  
 (p11) "mRNA," complete cds 1891 75 90 228 20 230 M38690\_at Human CD9 antigen  
 "mRNA," complete cds 1172 367 1654 1216 189 264 M54914\_s\_at Human  
 follicle-stimulating hormone beta-subunit gene 20 24 20 20 20 20 M54915\_s\_at  
 Human h-pim-1 protein (h-pim-1) "mRNA," complete cds 500 154 436 506 184 169  
 M54927\_at Human myelin proteolipid protein "mRNA," complete cds 33 48 20 20  
 20 186 M54951\_at Human atrial natriuretic factor gene 62 20 20 20 20 60  
 M54968\_at Human K-ras oncogene protein "mRNA," complete cds 20 35 28 20 41 20  
 M54992\_at Human B-cell differentiation antigen "mRNA," complete cds 70 20 22  
 20 20 20 M54995\_at Human connective tissue activation peptide III "mRNA,"  
 complete cds 20 99 58 31 72 93 M55024\_s\_at Human cell surface glycoprotein  
 P3.58 "mRNA," partial cds. /gb=M55024 /ntype=RNA 20 20 20 20 20 21 M55040\_at  
 Human acetylcholinesterase (ACHE) "mRNA," complete cds 225 208 115 280 286  
 656 M55047\_at Human synaptotagmin "mRNA," complete cds 35 60 56 77 55 128  
 M55067\_at Human 47-kD autosomal chronic granulomatous disease protein "mRNA,"  
 complete cds 174 137 91 137 157 20 M55131\_at Human cystic fibrosis  
 transmembrane conductance regulator (CFTR) gene 39 40 207 20 20 25 M55150\_at  
 Human fumarylacetoacetate hydrolase "mRNA," complete cds 166 371 435 309 518  
 467 M55153\_at Human transglutaminase (TGase) "mRNA," complete cds 20 28 20  
 78 169 238 M55172\_at Human large aggregating cartilage proteoglycan core  
 protein "mRNA," complete cds 20 46 20 20 180 77 M55210\_at Human laminin B2  
 chain (LAMB2) gene 20 50 132 124 319 20 M55265\_at Human casein kinase II  
 alpha subunit "mRNA," complete cds 108 116 193 112 330 88 M55267\_at Human  
 EV12 protein gene 20 95 35 20 205 20 M55268\_at Human casein kinase II alpha  
 subunit "mRNA," complete cds 57 114 254 254 200 20 M55284\_at Human protein  
 kinase C-L (PRKCL) "mRNA," complete cds 20 20 20 20 20 20 M55409\_s\_at Human  
 pancreatic tumor-related protein "mRNA," 3' end 1992 2532 4850 4627 719 906  
 M55418\_at Human amelogenin (AMELX) "gene," 3' end of cds 20 34 20 20 238 20  
 M55419\_at Human amelogenin (AMELY) "gene," 3' end of cds 20 20 20 20 20 20  
 M55420\_at Human IgE "chain," last 2 exons 105 43 64 168 20 121 M55422\_at  
 Human Krueppel-related zinc finger protein (H-plk) "mRNA," complete cds 20 78  
 178 96 37 90 M55513\_s\_at Human potassium channel (HPCN1) "mRNA," complete cds  
 52 20 120 57 260 93 M55531\_at Human glucose transport-like 5 (GLUT5) "mRNA,"  
 complete cds 82 121 208 141 90 96 M55542\_at Human guanylate binding protein  
 isoform I (GBP-2) "mRNA," complete cds 117 20 58 26 20 96 M55543\_at Human  
 guanylate binding protein isoform II (GBP-2) "mRNA," complete cds 77 189 292  
 251 33 129 M55593\_at Human collagenase type IV (CLG4) gene 739 471 351 274  
 271 384 M55621\_at Human N-acetylglucosaminyltransferase 1 (GlcNac-TI) "mRNA,"  
 complete cds 304 20 215 600 397 80 M55671\_at Human protein Z (plus 55 bp  
 insertion) "mRNA," complete cds 122 162 20 100 268 105 M55682\_s\_at Human  
 cartilage matrix protein (CMP) gene 20 20 20 20 20 20 M55683\_at Human  
 cartilage matrix protein (CMP) "mRNA," exon 8-Mar 20 20 20 20 20 20  
 M55905\_at Human mitochondrial NAD(P)+ dependent malic enzyme "mRNA," complete  
 cds 20 20 76 58 20 20 M55998\_s\_at Human alpha-1 collagen type I "gene," 3'  
 end 1610 1610 360 46 221 326 M57230\_at Human membrane glycoprotein gp130

"mRNA," complete cds 20 20 20 20 27 33 M57293\_at Human parathyroid hormone-related peptide (PTHrP) "gene," exons "1A," "1B," "1C," and 2 /gb=M57293 /ntype=DNA /annot=mRNA 20 20 20 20 202 210 M57399\_at Human nerve growth factor (HBNF-1) "mRNA," complete cds 150 128 45 135 299 481 M57423\_f\_at 20 20 20 20 103 20 M57464\_s\_at Human ret proto-oncogene "mRNA," complete cds 23 20 41 20 20 49 M57466\_s\_at Human NHC class II HLA-DP light chain "mRNA," complete cds 188 312 20 20 20 880

#### DETL:

20 45 20 20 20 22 U09117\_at Human phospholipase c delta 1 "mRNA," complete cds 344 464 206 612 638 1198 U09178\_s\_at Human dihydropyrimidine dehydrogenase "mRNA," complete cds 20 44 56 27 57 20 U09196\_at Human 1.1 kb mRNA upregulated in retinoic acid treated HL-60 neutrophilic cells 95 213 339 197 408 314 U09210\_at Human vesicular acetylcholine transporter "mRNA," complete cds 20 131 20 20 23 20 U09278\_at Human fibroblast activation protein "mRNA," complete cds 20 34 20 20 20 20 U09279\_at Human type XIX collagen (COL19A1) "mRNA," partial cds 20 58 56 20 20 20 U09284\_at Human PINCH protein "mRNA," complete cds 20 53 92 53 28 106 U09303\_at Human T cell leukemia LERK-2 (EPLG2) "mRNA," complete cds 95 240 171 132 478 308 U09366\_at Human zinc finger protein ZNF133 76 109 98 156 283 210 U09367\_at Human zinc finger protein ZNF136 20 67 20 20 20 50 U09368\_at Human zinc finger protein ZNF140 20 25 41 20 47 20 U09410\_at Human zinc finger protein ZNF131 "mRNA," partial cds 20 42 36 61 82 212 U09411\_at Human zinc finger protein ZNF132 "mRNA," complete cds 20 104 55 21 186 234 U09412\_at Human zinc finger protein ZNF134 "mRNA," complete cds 47 98 69 87 78 109 U09413\_at Human zinc finger protein ZNF135 "mRNA," complete cds 20 72 20 20 118 25 U09414\_at Human zinc finger protein ZNF137 "mRNA," complete cds 20 74 102 96 24 91 U09477\_at Human clone 53BP1 p53-binding protein "mRNA," partial cds 89 99 127 99 129 192 U09510\_s\_at Human glycyl-tRNA synthetase "mRNA," complete cds 138 121 197 141 210 111 U09550\_at Human oviductal glycoprotein "mRNA," complete cds 20 20 20 29 38 20 U09564\_at Human serine kinase "mRNA," complete cds 117 79 247 104 132 43 U09578\_at Human MAPKAP kinase (3pK) "mRNA," complete cds 20 20 20 68 20 25 U09579\_at Human melanoma differentiation associated (mda-6) "mRNA," complete cds 242 61 20 203 315 131 U09584\_at Human PL6 protein (PL6) "mRNA," complete cds 136 130 83 104 40 20 U09587\_at 144 178 135 163 50 210 U09607\_at Human JAK family protein tyrosine kinase (JAK3) "mRNA," complete cds 68 85 20 86 320 321 U09609\_at Human p80HT (p80HT/NKFB-2) "mRNA," complete cds 20 42 88 20 20 71 U09648\_at Human carnitine palmitoyltransferase II precursor (CPT1) gene 20 20 20 20 29 20 U09716\_s\_at Human mannose-specific lectin (MR60) "mRNA," complete cds 20 25 154 62 115 89 U09759\_at Human protein kinase (JNK2) "mRNA," complete cds 23 20 44 20 227 20 U09770\_at Human cysteine-rich heart protein (hCRHP) "mRNA," complete cds 114 150 64 173 62 255 U09813\_at Human mitochondrial ATP synthase subunit "9," P3 gene "copy," "mRNA," nuclear gene encoding mitochondrial "protein," complete cds 715 434 1114 771 138 403 U09820\_s\_at 25 36 111 51 224 82 U09825\_at Human acid finger protein "mRNA," complete cds 85 52 204 164 20 197 U09848\_at Human zinc finger protein (ZNF139) "mRNA," partial cds 39 147 169 35 160 26 U09850\_at Human zinc finger protein (ZNF143) "mRNA," complete cds 20 44 20 20 114 170 U09851\_s\_at Human zinc finger protein (ZNF148) "mRNA," partial cds 20 23 67 45 20 20 U09860\_at Human enterokinase "mRNA," complete cds 20 20 40 42 36 94 U09877\_at Human helicase-like protein (HLP) "mRNA," complete cds 20 20 20 20 20 20 U09937\_ma1\_s\_at urokinase-type plasminogen activator receptor gene extracted from Human urokinase-type

plasminogen receptor 20 40 82 124 33 136 U09953\_at Human ribosomal protein L9  
 "mRNA," complete cds 2506 2871 3863 2285 930 959 U10099\_s\_at Human POM-ZP3  
 "mRNA," complete cds 20 20 20 20 20 20 U10117\_at Human endothelial-monocyte  
 activating polypeptide II "mRNA," complete cds 70 20 116 39 20 20 U10323\_at  
 Human nuclear factor NF45 "mRNA," complete cds 172 254 655 456 263 685  
 U10324\_at Human nuclear factor NF90 "mRNA," complete cds 20 20 20 20 20 42  
 U10362\_at Human GP36b glycoprotein "mRNA," complete cds 65 20 20 35 20 20  
 U10439\_at Human double-stranded RNA adenosin deaminase "mRNA," complete cds  
 116 154 163 234 221 251 U10473\_s\_at Human clone p4betaGT/3  
 "beta-1,4-galactosyltransferase" "mRNA," partial cds. /gb=U10473 /ntype=RNA 42  
 35 20 38 20 31 U10485\_at Human lymphoid-restricted membrane protein (Jaw1)  
 "mRNA," complete cds 47 20 75 116 20 229 U10492\_at Human Mox1 protein (MOX1)  
 "mRNA," complete cds 156 153 74 79 20 125 U10550\_at Human Gem GTPase (gem)  
 "mRNA," complete cds 129 24 87 20 116 24 U10685\_at Human MAGE-10 antigen  
 (MAGE10) "gene," complete cds 89 25 99 63 178 93 U10686\_at Human MAGE-11  
 antigen (MAGE11) "gene," complete cds 132 125 277 102 231 231 U10687\_s\_at  
 Human MAGE-4a antigen (MAGE4a) "gene," complete cds 20 20 20 20 20 71  
 U10689\_f\_at Human MAGE-5a antigen (MAGE5a) "gene," complete cds 20 20 58 20  
 412 29 U10690.sub.-- f\_at Human MAGE-5b antigen (MAGE5b) "gene," complete cds  
 20 20 26 20 215 20 U10693\_at Human MAGE-8 antigen (MAGE8) "gene," complete  
 cds 35 20 20 20 104 70 U10868\_at Human aldehyde dehydrogenase ALDH7 "mRNA,"  
 complete cds 77 144 122 105 65 61 U10886\_at Human density enhanced  
 phosphatase-1 "mRNA," complete cds 20 20 37 20 20 20 U10991\_at Human G2  
 protein "mRNA," partial cds 30 59 57 38 236 81 U11036\_at Human lbd1 "mRNA,"  
 partial cds. /gb=U11036 /ntype=RNA 20 20 20 20 20 20 U11037\_at Human Sel-1  
 like "mRNA," complete cds 26 20 20 45 266 20 U11090\_at Human  
 hydroxyindole-O-methyltransferase promoter A-derived (HIOMT) "mRNA," complete  
 cds 63 32 107 38 52 266 U11287\_at Human N-methyl-D-aspartate receptor subunit  
 NR3 (hNR3) "mRNA," complete cds 20 20 20 20 20 20 U11292\_at Human Ki nuclear  
 autoantigen "mRNA," complete cds 137 127 259 201 366 407 U11313\_at Human  
 sterol carrier protein-X/sterol carrier protein-2 (SCP-X/SCP-2) "gene,"  
 promoter and 20 20 64 49 20 83 U11690\_at Human faciogenital dysplasia (FGD1)  
 "mRNA," complete cds 74 68 20 20 20 85 U11701\_at Human LIM-homeobox domain  
 protein (hLH-2) "mRNA," complete cds 20 20 20 20 20 20 U11717\_s\_at Human  
 calcium activated potassium channel (hslo) "mRNA," complete cds 20 20 20 20  
 20 20 U11732\_at Human ets-like gene (tel) "mRNA," complete cds 66 20 20 75  
 66 24 U11791\_at Human cyclin H "mRNA," complete cds 85 20 20 81 70 193  
 U11821\_s\_at Human Fas ligand (FasL) "mRNA," complete cds 20 20 20 20 20 20  
 U11861\_at Human G10 homolog (edg-2) "mRNA," complete cds 432 536 525 431 585  
 462 U11862\_s\_at Human clone HP-DAO1 diamine "oxidase," copper/topa  
 quinone-containing "mRNA," complete cds 20 20 20 20 250 20 U11863\_at Human  
 clone HP-DAO2 diamine "oxidase," copper/topa quinone containing "mRNA,"  
 complete cds 20 20 20 20 20 20 U11870\_ma1\_at Human interleukin-8 receptor  
 type A (IL8RBA) gene, promoter and complete cds. 20 22 20 48 20 67 U11872\_at  
 Human interleukin-9 receptor type B (IL8RB) "mRNA," splice variant "IL8RB1,"  
 partial cds. /gb=U11872 /ntype=RNA 20 71 53 49 135 105 U11875\_s\_at Human  
 interleukin-8 receptor type B (IL8RB) "mRNA," splice variant "IL8RB4," partial  
 cds. /gb=U11875 /ntype=RN 56 39 136 29 275 140 U11877\_at Human interleukin-8  
 receptor type B (IL8RB) "mRNA," splice variant "IL8RB9," partial cds.  
 /gb=U11877 /ntype=RNA 51 60 20 20 177 20 U11878\_at Human interleukin-8  
 receptor type B (IL8RB) "mRNA," splice variant "IL8RB10," partial cds.  
 /gb=U11878 /ntype=RNA 20 20 20 20 20 86 U12139\_at Human alpha1(XI) collagen  
 (COL11A1) "gene," 5' region and exon 1 /gb=U12139 /ntype=DNA /annot=exon 261

243 20 169 548 20 U12140\_at Human tyrosine kinase receptor p145TRK-B (TRK-B)  
 "mRNA," complete cds 27 20 84 52 106 66 U12255\_at Human IgG Fc receptor hFcRn  
 "mRNA," complete cds 195 195 332 133 321 261 U12259\_cds2\_s\_at Human paired  
 box homeotic protein (PAX3) gene 20 20 20 20 283 24

# DETL:

X12794\_at Human v-erbA related ear-2 gene 157 197 298 395 502 380  
 X12876\_s\_at 385 745 2078 2384 1014 310 X12901\_at Human mRNA for villin 20  
 20 20 20 38 20 X12953\_at Human rab2 "mRNA," YPT1-related and member of ras  
 family 108 69 29 132 20 63 X13100\_s\_at Human mRNA fragment for myosin heavy  
 chain 20 20 20 20 20 20 X13227\_at Human mRNA for D-amino acid oxidase (EC  
 1.4.3.3) 41 20 51 36 20 157 X13238\_at Human mRNA for cytochrome c oxidase  
 suubnit VIc 563 339 399 560 286 494 X13255\_at Human mRNA for dopamine  
 beta-hydroxylase type a (EC 1.1.4.17.1) 20 20 20 20 42 20 X13293\_at Human  
 mRNA for B-myb gene 20 20 20 20 20 20 X13334\_at Human CD14 mRNA for myelid  
 cell-specific leucine-rich glycoprotein 20 20 20 20 20 407 X13444\_at Human  
 mRNA for CD8 beta-chain glycoprotein (CD8 beta 1) 241 152 223 151 246 268  
 X13451\_s\_at 20 20 20 20 20 20 X13461\_s\_at H. sapiens intronless  
 calmodulin-like gene (CLP gene) for mcalmodulin-like protein 296 20 20 71 20  
 68 X13482\_at Human mRNA for U2 snRNP-specific A' protein 54 41 74 89 45 38  
 X13546\_ma1\_at Human HMG-17 gene for non-histone chromosomal protein HMG-17.  
 222 216 271 254 208 1126 X13589\_at Human mRNA for aromatase (estrogen  
 synthetase) 20 20 20 20 31 20 X13766\_s\_at Human beta-casein mRNA 3'-terminal  
 fragment 20 20 20 20 20 20 X13794\_ma1\_at H. sapiens lactate dehydrogenase B  
 gene exon 1 and 2 (EC 1.1.1.27) (and joined CDS). 300 508 961 947 160 232  
 X13810\_s\_at Human OTF-2 mRNA for lymphoid-specific transcription factor 20  
 273 201 74 1568 517 X13839\_at Human mRNA for vascular smooth muscle  
 alpha-actin 1405 801 20 20 43 20 X13916\_at Human mRNA for LDL-receptor  
 related protein 29 38 35 57 20 20 X13930\_f\_at Human CYP2A4 mRNA for P-450  
 IIA4 protein 94 113 253 127 204 158 X13955\_s\_at Human mRNA for myosin alkali  
 light chain 20 20 20 20 20 20 X13956\_at Human 12S RNA induced by "poly(rl),"  
 poly(rC) and Newcastle disease virus 26 67 104 41 55 119 X13967\_at Human  
 mRNA for leukaemia inhibitory factor (LIF/HILDA) 145 80 94 62 268 236  
 X13973\_at Human mRNA for ribonuclease/angiogenin inhibitor (RAI) 153 131 173  
 176 156 204 X14008\_ma1\_f\_at Human lysozyme gene (EC 3.2.1.17) 602 1072 336  
 481 553 986 X14046\_at Human mRNA for leukocyte antigen CD37 43 63 31 20 42  
 159 X14085\_s\_at H. sapiens mRNA for "beta-1,4-galactosyltransferase" (EC  
 2.4.1.22) 112 141 275 192 215 124 X14253\_s\_at Human mRNA for cripto protein  
 51 33 20 20 175 22 X14329\_at Human mRNA for carobxypeptidase N small subunit  
 (EC 3.4.17.3) 20 61 20 20 81 72 X14346\_at Human mRNA for eoisinophil  
 peroxidase 20 20 20 20 20 32 X14362\_at Human CR1 mRNA for C3b/C4b receptor  
 secreted form 20 20 20 20 20 20 X14445\_at Human int-2 proto-oncogene 98 21  
 20 20 140 83 X14448\_at Human GLA gene for alpha-D-galactosidase A (EC  
 3.2.1.22) 123 115 109 97 178 228 X14474\_at Human mRNA for  
 microtubule-associated tau protein 20 22 95 20 143 31 X14675\_at Human  
 bcr-abl mRNA 5' fragment (clone 3c). /gb=X14675 /ntype=RNA 130 60 116 85 20  
 189 X14684\_s\_at Human mRNA for La protein C-terminal region 136 258 469 379  
 244 172 X14690\_s\_at Human mRNA for plasma inter-alpha-trypsin inhibitor heavy  
 chain H(3) 20 20 20 20 20 20 X14766\_at Human mRNA for GABA-A "receptor,"  
 alpha 1 subunit 115 91 226 123 20 56 X14767\_at Human mRNA for GABA-A  
 "mreceptor," beta 1 subunit 30 20 20 20 180 20 X14787\_at Human mRNA for  
 thrombospondin 155 20 23 20 20 23 X14789\_at H. sapiens alpha-A crystallin  
 gene exon "1,2" and pseudoexon 30 20 44 20 20 20 X14813\_at Human liver mRNA

for 3-oxoacyl-CoA thiolase 60 32 91 114 61 219 X14830\_at Human mRNA for  
 muscle acetylcholine receptor beta-subunit 58 45 46 24 75 161 X14850\_at  
 Human H2A.X mRNA encoding histone H2A.X 54 44 87 99 47 165 X14885\_ma1\_s\_at  
 H. sapiens gene for transforming growth factor-beta 3 (TGF-beta 3) exon 1 (and  
 joined CDS) 20 20 20 20 20 20 X14894\_at Human mRNA for myogenic factor Myf-5  
 20 20 20 20 20 20 X14968\_at Human testis mRNA for the RII-alpha subunit of  
 cAMP dependent protein kinase 20 20 20 20 20 20 X14975\_at Human CDI R2 gene  
 for MHC-related antigen 20 21 20 20 20 27 X15088\_at Human GNAT1 mRNA for  
 transducin alpha-chain 20 20 20 20 20 20 X15183\_at Human mRNA for 90-kDa  
 heat-shock protein 919 1273 1901 1791 586 1790 X15187\_at Human tra1 mRNA for  
 human homologue of murine tumor rejection antigen gp96 199 106 307 246 139  
 172 X15217\_at Human sno oncogene mRNA for snoA "protein," ski-related 20 20  
 20 20 20 20 X15218\_at Human ski oncogene mRNA 20 20 20 20 38 20  
 X15306\_ma1\_at H. sapiens NF-H gene, exon 1 (and joined CDS). 20 25 28 23 70  
 20 X15331\_s\_at Human mRNA for phosphoribosylpyrophosphate synthetase subunit  
 one 20 20 20 20 109 112 X15341\_at Human COX Via-L mRNA for cytochrome c  
 oxidase liver-specific subunit VIa (EC 1.9.3.1) 1338 1071 1351 1611 944 1377  
 X15357\_at Human mRNA for natriuretic peptide receptor (ANP-A receptor) 20 20  
 38 52 31 108 X15376\_at Human mRNA for GABA-A "receptor," gamma 2 subunit 90  
 83 92 73 91 104 X15393\_ma1\_at H. sapiens motilin gene exon 2 (and joined  
 CDS). 93 98 138 116 254 223 X15414\_at Human mRNA for aldose reductase (EC  
 1.1.1.2) 110 174 93 249 383 254 X15422\_at Human mRNA for mannose-binding  
 protein C 20 20 20 20 20 20 X15525\_ma1\_at H. sapiens lysosomal acid  
 phosphatase gene (EC 3.1.3.2) Exon 1 (and joined CDS) 25 54 59 22 31 53  
 X15573\_at Human liver-type 1-phosphofructokinase (PFKL) "mRNA," complete cds  
 20 20 20 31 20 20 X15673\_s\_at Human pTR2 mRNA for repetitive sequence.  
 /gb=X15673 /ntype=RNA 66 108 246 124 262 137 X15675\_at Human pTR7 mRNA for  
 repetitive sequence. /gb=X15675 /ntype=RNA 20 20 20 20 136 20 X15722\_at  
 Human mRNA for glutathione reductase (EC 1.6.4.2) 20 20 20 20 20 20  
 X15729\_s\_at Human mRNA for nuclear p68 protein 305 295 511 489 201 262  
 X15822\_at Human COX VIIa-L mRNA for liver-specific cytochrome c oxidase (EC  
 1.9.3.1.) 760 830 710 834 439 1003 X15875\_at Human mRNA for cAMP response  
 element (CRE-BP1) binding protein 62 35 64 58 123 78 X15880\_at Human mRNA  
 for collagen VI alpha-1 C-terminal globular domain 429 267 136 92 221 181  
 X15882\_at Human mRNA for collagen VI alpha-2 C-terminal globular domain 314  
 68 31 20 52 30 X15940\_at Human mRNA form ribosomal protein L31 3375 5994  
 4331 4748 2189 4097 X15943\_at Human calcitonin/alpha-C GRP gene 20 20 20 20  
 20 20 X15949\_at Human mRNA for interferon regulatory factor-2 (IRF-2) 21 33  
 52 60 22 49 X15954\_ma1\_s\_at H. sapiens MBP1 "gene," exon 1 (and joined CDS)  
 20 20 20 20 20 20 X16064\_at Human mRNA for translationally controlled tumor  
 protein 4572 3795 3961 4448 1971 2255 X16105\_at Human mRNA for RD "protein,"  
 RNA-binding 81 99 118 108 20 54 X16135\_at Human mRNA for novel heterogeneous  
 nuclear RNP "protein," L protein 242 326 388 317 481 477 X16260\_s\_at Human  
 mRNA for inter-alpha-trypsin inhibitor subunit 3 20 20 20 20 20 20 X16281\_at  
 Human mRNA for zinc finger protein (clone 431) 20 20 20 20 73 20 X16282\_at  
 Human mRNA for zinc finger protein (clone 647) 20 20 20 20 35 20 X16316\_at  
 Human mRNA for vav oncogene 153 111

#### DETL:

20 20 20 20 20 20 Y09561\_at H. sapiens mRNA for P2X7 receptor 27 20 20 20  
 20 20 Y09615\_at H. sapiens mRNA for mitochondrial transcription termination  
 factor 20 25 20 20 20 20 Y09616\_at H. sapiens mRNA for putative  
 carboxylesterase 121 92 143 96 135 159 Y09836\_at H. sapiens mRNA for 3'UTR

of unknown protein 62 35 20 20 64 20 Y09858\_at H. sapiens mRNA for unknown  
protein 20 30 27 24 52 38 Y09912\_ma1\_at H. sapiens AP-2 beta gene. 20 20  
20 20 20 20 Y09943\_s\_at H. sapiens mRNA for NGF-inducible PC3  
anti-proliferative protein 20 20 20 20 20 20 Y09980\_ma4\_at H. sapiens HOXD3  
gene. 20 27 27 20 56 20 Y10032\_at H. sapiens mRNA for putative  
serine/threonine protein kinase 130 28 20 26 76 107 Y10055\_at H. sapiens  
mRNA for phosphoinositide 3-kinase 20 20 20 20 149 85 Y10141\_s\_at H. sapiens  
DAT1 "gene," "partial," VNTR. /gb=Y10141 /ntype=DNA /annot=CDS 20 20 133 24  
231 143 Y10202\_at H. sapiens mRNA for CD207 protein. /gb=Y10202 /ntype=RNA 20  
20 20 20 20 24 Y10204\_at H. sapiens mRNA for CD77 protein. /gb=Y10204  
/ntype=RNA 20 24 20 20 20 20 Y10205\_at H. sapiens mRNA for CD88 protein.  
/gb=Y10205 /ntype=RNA 20 20 20 20 20 20 Y10207\_at H. sapiens mRNA for CD171  
protein. /gb=Y10207 /ntype=RNA 57 90 27 20 135 211 Y10209\_at H. sapiens mRNA  
for CD30L protein. /gb=Y10209 /ntype=RNA 20 20 20 20 20 20 Y10210\_at Y.  
sapiens mRNA for CD22 protein. /gb=Y10210 /ntype=RNA 20 20 20 20 20 20  
Y10256\_at H. sapiens mRNA for serine/threonine protein "kinase," NIK 20 20 20  
20 53 20 Y10260\_at H. sapiens EYA1 gene 20 40 20 20 125 21 Y10262\_s\_at H.  
sapiens EYA3 gene. /gb=Y10262 /ntype=DNA /annot=CDS 20 20 66 20 112 29  
Y10275\_at H. sapiens mRNA for L-3-phosphoserine phosphatase 20 20 20 20 30 20  
Y10313\_at H. sapiens mRNA for nerve growth factor-incucible PC4 homologue 34  
26 26 20 95 51 Y10375\_s\_at H. sapiens mRNA for SIRP-alpha1 20 20 20 20 467  
139 Y10376\_at H. sapiens mRNA for SIRP-beta1 106 20 33 30 20 147 Y10505\_at  
H. sapiens mRNA for CD104 protein. /gb=Y10505 /ntype=RNA 20 20 20 20 20 20  
Y10506\_at H. sapiens mRNA for CD110 protein. /gb=Y10506 /ntype=RNA 24 65 20  
20 59 20 Y10508\_s\_at H. sapiens mRNA for CD190 protein. /gb=Y10508 /ntype=RNA  
20 20 20 20 20 20 Y10510\_at H. sapiens mRNA for CD67S protein. /gb=Y10510  
/ntype=RNA 20 20 20 20 47 20 Y10511\_at H. sapiens mRNA for CD176 protein.  
/gb=Y10511 /ntype=RNA 23 20 20 20 20 20 Y10512\_at H. sapiens mRNA for CD282  
protein. /gb=Y10512 /ntype=RNA 20 20 20 20 20 20 Y10514\_s\_at mRNA for CD152  
protein. /gb=Y10514 /ntype=RNA 20 26 20 31 166 55 Y10515\_at H. sapiens mRNA  
for CD58 T7 protein. /gb=Y10515 /ntype=RNA 20 20 20 45 20 Y10517\_at  
H. sapiens mRNA for CD108 protein. /gb=Y10517 /ntype=RNA 20 20 20 20 28 20  
Y10518\_at H. sapiens mRNA for CD202 protein. /gb=Y10518 /ntype=RNA 20 20 20  
20 59 25 Y10571\_at H. sapiens mRNA for dinG gen 20 20 20 20 20 22 Y10615\_at  
H. sapiens CYRN2 gene. /gb=Y10615 /ntype=DNA /annot=CDS 34 20 53 34 110 63  
Y10659\_at H. sapiens IL-13Ra mRNA 20 20 20 20 20 24 Y10807\_s\_at H. sapiens  
mRNA for arginine "methyltransferase," splice "variant," 1262 bp 87 101 558  
442 456 407 Y10812\_at H. sapiens mRNA for fructose-bisphosphatase 20 20 20  
20 20 20 Y10871\_at H. sapiens twist gene 110 154 116 97 279 284 Y10936\_at  
H. sapiens mRNA for hypothetical protein downstream of DMPK and DMAHP 41 20  
61 35 58 40 Y11174\_at H. sapiens mRNA for RP3 gene. /gb=Y11174 /ntype=RNA 20  
20 20 20 20 20 Y11180\_at H. sapiens mRNA for twist "protein," partial.  
/gb=Y11180 /ntype=RNA 20 29 20 20 20 20 Y11215\_at H. sapiens mRNA for SKAP55  
protein. /gb=Y11215 /ntype=RNA 34 58 55 50 20 66 Y11251\_at H. sapiens mRNA  
for novel member of serine-arginine domain "protein," SRrp129 20 20 40 22 41  
20 Y11306\_ma1\_at Homo sapiens mRNA for hTCF-4. 67 58 63 53 20 96 Y11416\_at  
H. sapiens mRNA for P73. 20 43 20 21 125 64 Y11651\_at H. sapiens mRNA for  
phosphate cyclase 20 20 24 30 20 20 Y11681\_at Homo sapiens mRNA for  
mitochondrial ribosomal protein S12. /gb=Y11681 /ntype=RNA 112 172 137 114 40  
154 Y11709\_at H. sapiens mRNA for extracellular matrix protein collagen type  
"XIV," N-terminus. /gb=Y11709 /ntype=RNA 20 20 20 20 20 20 Y11710\_ma1\_at H.  
sapiens mRNA for extracellular matrix protein collagen type XIV, C-terminus.  
21 73 43 52 127 131 Y11897\_at H. sapiens Brx gene 3'UTR. /gb=Y11897

/ntype=RNA 66 40 57 56 159 98 Y11999\_at H. sapiens mRNA for inositol  
 "1,4,5-trisphosphate" 3-kinase. /gb=Y11999 /ntype=RNA 20 20 20 20 20  
 Y12393\_s\_at H. sapiens mRNA for SRP1-like "protein," partial 20 20 88 40 20  
 39 Y12394\_at H. sapiens mRNA for SRP1-like protein 20 20 27 20 20 20  
 Y12478\_at H. sapiens mRNA for CHD5 protein 20 20 20 20 20 20 Y12556\_at H.  
 sapiens mRNA for AMP-activated protein kinase beta-1. /gb=Y12556 /ntype=RNA 20  
 20 20 20 20 20 Y12670\_at H. sapiens OB-RGRP gene. /gb=Y12670 /ntype=RNA 20  
 71 165 133 20 20 Y12711\_at H. sapiens mRNA for putative protosterone binding  
 protein 73 48 133 153 91 65 Y12812\_at H. sapiens RFXAP mRNA 20 20 20 20 20  
 20 Y12856\_at H. sapiens mRNA for AMP-activated protein kinase "alpha-1,"  
 partial. /gb=Y12856 /ntype=RNA 41 20 22 20 105 39 Y13115\_at Homo sapiens mRNA  
 for serin/threonine protein kinase SAK 55 78 26 48 117 92 Y13153\_at Homo  
 sapiens mRNA for kynurenin 3-monooxygenase. /gb=Y13153 /ntype=RNA 32 26 24 26  
 133 99 Y13247\_at Homo sapiens fb19 mRNA 81 49 91 123 328 171 Y13618\_at Homo  
 sapiens mRNA for DFFRY "protein," abundant transcript 20 20 20 22 20 20  
 Y13620\_at Homo sapiens mRNA for BCL9 gene. /gb=Y13620 /ntype=RNA 20 20 20 20  
 20 20 Y13896\_at Homo sapiens skeletal muscle alternate 5'end of gene Kir4.2  
 5'UTR. /gb=Y13896 /ntype=RNA 20 20 20 20 143 35 Y14140\_at Homo sapiens G  
 protein gene encoding beta 3 subunit exon 1 and promoter. /gb=Y14140  
 /ntype=DNA /annot=exon 88 57 121 88 128 120 Z00010\_at 20 20 20 20 38 31  
 Z11502\_at H. sapiens mRNA for intestine-specific annexin 20 20 20 20 66 45  
 Z11518\_s\_at H. sapiens mRN for histidyl-tRNA synthetase 20 20 98 38 216 57  
 Z11559\_at H. sapiens mRNA for iron regulatory factor 38 24 28 20 20 60  
 Z11685\_s\_at H. sapiens mRNA for RNA helicase 20 20 20 33 32 20 Z11695\_at H.  
 sapiens 40 kDa protein kinase related to rat ERK2 20 20 20 20 20 20  
 Z11697\_at Homo sapiens mRNA for HB15 27 20 25 20 87 20 Z11737\_at H. sapiens  
 mRNA for flavin-containing monooxygenase 4 20 20 37 20 44 20 Z11793\_at H.  
 sapiens mRNA for selenoprotein P 208 92 40 28 20 54 Z11850\_at H. sapiens  
 mRNA for somatotropin receptor 5' upstream region. /gb=Z11850 /ntype=RNA 20  
 20 20 20 20 Z11899\_s\_at H. sapiens OTF3 mRNA encoding octamer binding  
 protein 3B 68 154 191 235 94 139 Z11933\_at H. sapiens mRNA for N-Oct "3,"  
 "N-Oct5a," and N-Oct 5b proteins 20 20 20 20 275 20 Z12173\_at H. sapiens GNS  
 mRNA encoding glucosamine-6-sulphatase 20 20 20 20 20 43 Z12830\_at H.  
 sapiens mRNA for SSR alpha subunit 20 20 23 36 20 29 Z12962\_at H. sapiens  
 mRNA for homologue to yeast ribosomal protein L41 7468 11237 7087 7602 8100  
 7623



US-PAT-NO: 6280926

DOCUMENT-IDENTIFIER: US 6280926 B1

TITLE: Gene expression library produced from DNA from uncultivated microorganisms and methods for making the same

DATE-ISSUED: August 28, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Rancho Santa Fe	CA	N/A	N/A

US-CL-CURRENT: 435/4,435/183 ,435/6

ABSTRACT:

Disclosed is a process of screening clones having DNA from an uncultivated microorganism for a specified protein, e.g. enzyme, activity by screening for a specified protein, e.g. enzyme, activity in a library of clones prepared by (i) recovering DNA from a DNA population derived from at least one uncultivated microorganism; and (ii) transforming a host with recovered DNA to produce a library of clones which is screened for the specified protein, e.g. enzyme, activity.

22 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

DATE FILED: December 10, 1997

----- KWIC -----

DEPV:

d. Glycoside synthesis using UDP-galactosyl transferase

DETL:

TABLE 4 ##STR23## 4-methyl umbelliferone wherein R = G2 .beta.-D-galactose .beta.-D-glucose .beta.-D-glucuronide GB3 .beta.-D-celotrioside .beta.-B-cellobiopyranoside GC3 .beta.-D-galactose .alpha.-D-galactose GD3 .beta.-D-glucose .alpha.-D-glucose GE3 .beta.-D-glucuronide GI3 .beta.-D-N,N-diacetylchitobiose GJ3 .beta.-D-fucose .alpha.-L-fucose .beta.-L-fucose GK3 .beta.-D-mannose .alpha.-D-mannose non-Umbelliferyl substrates GA3 amylose [polyglucan .alpha.1.4 linkages], amylopectin [polyglucan branching .alpha.1.6 linkages] GF3 xylan [poly 1,4-D-xylan] GG3 amylopectin, pullulan GH3 sucrose, fructofuranoside

US-PAT-NO: 6168919

DOCUMENT-IDENTIFIER: US 6168919 B1

TITLE: Screening methods for enzymes and enzyme kits

DATE-ISSUED: January 2, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short, Jay M.	Encinitas	CA	N/A	N/A

US-CL-CURRENT: 435/6,435/183 ,435/252.3 ,435/320.1 ,435/325 ,435/4 ,435/91.1 ,435/91.4 ,435/91.41 ,536/23.1 ,536/23.2 ,536/23.4

ABSTRACT:

Recombinant enzyme libraries and kits where a plurality of enzymes are each characterized by different physical and/or chemical characteristics and classified by common characteristics. The characteristics are determined by screening of recombinant enzymes expressed by a DNA library produced from various microorganisms. Also disclosed is a process for identifying clones of a recombinant library which express a protein with a desired ctivity by screening a library of expression clones randomly produced from DNA of at least one microorganism, said screeing being effected on expression products of said clones to thereby identify clones which express a protein with a desired activity. Also disclosed is a process of screening clones having DNA from an uncultivated microorganism for a specified protein activity by screening for a specified protein activity in a library of clones prepared by (i) recovering DNA from a DNA population derived from at least one uncultivated microorganism; and (ii) transforming a host with recovered DNA to produce a library of clones which is screened for the specified protein activity.

9 Claims, 8 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 6

DATE FILED: September 30, 1998

----- KWIC -----

DEPV:

d. Glycoside synthesis using UDP-galactosyl transferase

DETL:

TABLE 4 ##STR30## wherein R = 4-methyl umbelliferone G2 .beta.-D-galactose .beta.-D-glucose .beta.-D-glucuronide **GB3** .beta.-D-celotrioside .beta.-D-cellobiopyranoside GC3 .beta.-D-galactose .alpha.-D-galactose GD3 .beta.-D-glucose .alpha.-D-glucose GE3 .beta.-D-glucuronide GI3 .beta.-D-N,N-diacetylchitobiose GJ3 .beta.-D-fucose .beta.-L-fucose .alpha.-L-fucose GK3 .beta.-D-mannose .alpha.-D-mannose non-Umbelliferyl substrates GA3 amylose [polyglucan .alpha.1,4 linkages], amylopectin [polyglucan branching .alpha.1,6 linkages] GF3 xylan [poly 1,4-D-xylan] GG3 amylopectin, pullulan GH3 sucrose, fructofuranoside

US-PAT-NO: 6004788

DOCUMENT-IDENTIFIER: US 6004788 A

TITLE: Enzyme kits and libraries

DATE-ISSUED: December 21, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short, Jay M.	Encinitas	CA	N/A	N/A

US-CL-CURRENT: 435/183,435/189 ,435/190 ,435/191 ,435/193 ,435/194 ,435/195 ,435/212 ,435/232 ,435/4

ABSTRACT:

Recombinant enzyme libraries and kits where a plurality of enzymes are each characterized by different physical and/or chemical characteristics and classified by common characteristics. The characteristics are determined by screening of recombinant enzymes expressed by a DNA library produced from various microorganisms.

2 Claims, 4 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

DATE FILED: July 18, 1995

----- KWIC -----

BSPV:

d. Glycoside synthesis using UDP-galactosyl transferase

DETL:

TABLE 4 \_\_\_\_\_ #STR25## - 4-methyl  
umbelliferone wherein R = G2 .beta.-D-galactose .beta.-D-glucose  
.beta.-D-glucuronide **GB3** .beta.-D-celotrioside .beta.-D-cellobiopyranoside  
GC3 .beta.-D-galactose .alpha.-D-galactose GD3 .beta.-D-glucose  
.alpha.-D-glucose GE3 .beta.-D-glucuronide GI3  
.beta.-D-N,N-diacetylchitobiose GJ3 .beta.-D-fucose .alpha.-L-fucose  
.beta.-L-fucose GK3 .beta.-D-mannose .alpha.-D-mannose non-Umbelliferyl  
substrates GA3 amylose [polyglucan .alpha.1,4 linkages], amylopectin  
[polyglucan branching .alpha.1,6 linkages] GF3 xylan [poly 1,4-D-xylan] GG3  
amylopectin, pullulan GH3 sucrose, fructofuranoside

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US-PAT-NO: 5958672

DOCUMENT-IDENTIFIER: US 5958672 A

TITLE: Protein activity screening of clones having DNA from uncultivated microorganisms

DATE-ISSUED: September 28, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short, Jay M.	Encinitas	CA	N/A	N/A

US-CL-CURRENT: 435/4,435/183 ,435/69.1 ,536/23.1 ,536/23.2

ABSTRACT:

Disclosed is a process of screening clones having DNA from an uncultivated microorganism for a specified protein, e.g. enzyme, activity by screening for a specified protein, e.g. enzyme, activity in a library of clones prepared by (i) recovering DNA from a DNA population derived from at least one uncultivated microorganism; and (ii) transforming a host with recovered DNA to produce a library of clones which is screened for the specified protein, e.g. enzyme, activity.

15 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

DATE FILED: June 3, 1996

----- KWIC -----

BSPR:

d. Glycoside synthesis using UDP-galactosyl transferase

DETL:

TABLE 4 \_\_\_\_\_ 4 #STR33##  
\_\_\_\_\_ 4-methyl umbelliferone wherein R = G2  
.beta.-D-galactose .beta.-D-glucose .beta.-D-glucuronide GB3  
.beta.-D-cellobioside .beta.-D-cellobiopyranoside GC3 .beta.-D-galactose  
.alpha.-D-galactose GD3 .beta.-D-glucose .alpha.-D-glucose GE3  
.beta.-D-glucuronide GI3 .beta.-D-N,N-diacetylchitobiose GJ3 .beta.-D-fucose  
.alpha.-L-fucose .beta.-L-fucose GK3 .beta.-D-mannose .alpha.-D-mannose  
non-Umbelliferyl substrates GA3 amylose [polyglucan .alpha.1,4 linkages],  
amylopectin [polyglucan branching .alpha.1,6 linkages] GF3 xylan [poly  
1,4-D-xylan] GG3 amylopectin, pullulan GH3 sucrose, fructofuranoside

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US-PAT-NO: 5874548

DOCUMENT-IDENTIFIER: US 5874548 A

TITLE: Regioselective sulfation

DATE-ISSUED: February 23, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Flitsch; Sabine	Oxford	N/A	N/A	<u>GB3</u>
Guilbert; Benedicte	Oxford	N/A	N/A	<u>GB3</u>

US-CL-CURRENT: 536/1.11,536/122 ,536/123.13 ,536/124 ,536/55.2

ABSTRACT:

A direct method is disclosed for the regioselective sulfation of an organic molecule having optionally derivatized hydroxyl groups on at least two adjacent carbon atoms. The method comprises the treatment of a di-(optionally substituted alkyl and/or aryl) stannylene acetal derivative of the molecule with an electrophilic sulfating agent, preferably sulfur trioxide/trimethylamine. The disclosed method is useful for the selective sulfation of a variety of mono-, di- and oligosaccharides. Novel saccharides prepared according to this method are also disclosed.

4 Claims, 0 Drawing figures

Exemplary Claim Number: 1

DATE FILED: May 16, 1997

----- KWIC -----

INCO:

GB3

INCO:

GB3

BSPR:

This methodology of selected sulfation was applied to the synthesis of sulfated N-acetyl lactosaminide 23, the thiophenyl glycoside of 1. Thiophenyl N-acetyl lactosaminide 21 is not commercially available and was prepared by enzymatic galactosylation of 20 using .beta.-1,4-galactosyltransferase from bovine milk. As an aside, it is interesting to note that it has previously been reported that 20 is not a substrate for this enzyme, (see, for example, Wong, C. H., et al, J. Am. Chem. Soc. 113, 8137-8145, 1991), but gave 21 in good isolated yield (.about.60%) using previously described procedures, (see, for example, Guilbert, B., and Flitsch, S. L., J. Chem. Soc., Perkin Trans. I, 1181-1186, 1994; Wong, C. H., et al, J. Org. Chem., 47, 5416-5418, 1982; and Unverzagt, C., et al, J. Am. Chem. Soc., 112, 9308-9309, 1990): ##STR9## These results might be due to the higher concentration of enzyme and acceptor (1 U/ml; 40 mM) as compared to the previous study (40 mU/ml; 25 mM). The 1,4 linkage in 21 was confirmed by NMR studies after acetylation. Treatment of 21 with acetic anhydride/pyridine at room temperature gave, after 45 hours, 22 which surprisingly contained free 3' and 4' hydroxyl groups. Nevertheless, the

relevant ring protons in 22 showed a suitable spread of NMR signals to make NOE experiments possible. Upon acetylation of 21 to 22, the 4-H signal was not shifted downfield and irradiation of 1'-H and 6'-Hb at 4.38 ppm caused 4.7% enhancement of the 4-H signal and as expected of 5'-H, 3'-H (7%) and 6'-Ha (8%) confirming the existence of a 1,4-linkage in 22.

#### DEPU:

General--Reactions were carried out in solvents distilled from standard drying agents; thin layer chromatography was performed on aluminium sheets silica gel 60F.sub.254 (Merck, layer thickness 0.2 mm); the components were detected by heating the TLC after spraying with a solution of 5% sulfuric acid-5% anisaldehyde in ethanol; silica gel C60 (Merck, 40-60 .mu.m) was used for flash chromatography; NMR spectra were recorded on Bruker AM-500 MHz, Varian Gemini 200 MHz or Bruker AM 200 MHz spectrometers using solvents as stated; Coupling constants J are in Herz; IR spectra were recorded on a Perkin-Elmer 1750 spectrometer and optical rotations on a Perkin-Elmer 241 polarimeter; mass spectrometry was carried out on VG Analytical Ltd, ZABIF or BIO-Q mass spectrometers using chemical impact (CI/NH.sub.3), ammonia desorption chemical ionisation (DCI/NH.sub.3), positive argon fast atom bombardment (FAB) and negative electrospray (ES.sup.-) as indicated; high resolution mass spectra were recorded on a VG AutospecEQ spectrometer (FAB.sup.-), Bruker FTICR using matrix assisted laser desorption ionisation (MALDI) or liquid secondary ionisation mass spectrometry (LSIMS) or by the EPSRC mass spectrometry service centre at Swansea; uridine 5'-diphospho-glucose (UDP-glucose), uridine 5'-diphospho-glucose 4-epimerase (EC 5.1.3.2), .beta.-1,4-galactosyltransferase from bovine milk (EC 2.4.1.22) and galactocerebroside (Type II, contains primarily nervonic acid) were purchased from Sigma; calf intestinal alkaline phosphatase (CIAP) (EC 3.1.3.1) and bovine serum albumin (BSA) were obtained from Boehringer Mannheim.

#### DEPU:

20 (12.5 mg, 40 .mu.mol) was sonicated with 50 mM sodium cacodylate buffer (pH 7.4, 1 ml) containing MnCl.sub.2 (2 mM), and NaN.sub.3 (6 mM) for 15 min. To the white suspension were added BSA (0.9 mg), CIAP (7 U), UDP-glucose (29.9 mg, 48 .mu.mol), UDP-galactose 4-epimerase (4 U) and .beta.-galactosyltransferase (1.07 U). The reaction mixture was incubated at 37.degree. C., after 17 hours the clear solution was reduced in vacuo and the residue chromatographed twice (MeOH/CHCl.sub.3 /H.sub.2 O 4:5:1, then MeOH/CHCl.sub.3 1:4) affording 21 as a white solid (11.3 mg, 60%): [.alpha.].sup.23.sub.D +8.3 (c 0.9 in H.sub.2 O); m.p. 228.degree. C.; Rf 0.35 (MeOH/CHCl.sub.3 /H.sub.2 O 4:5:1); .nu..sub.max (KBr)/cm.sup.-1 3409, 3300 (OH, NH), 2940, 2880 (CH), 1646 (C.dbd.O), 1548 (NH); .delta..sub.H (500 MHz; CD.sub.3 OD) 2.01 (3H, s, Ac), 3.46-3.47 (1H, m, 5-H), 3.50 (1H, dd, J 3.2, 9.7, 3'-H), 3.55 (1H, dd, J 7.5, 9.7, 2'-H), 3.60 (1H, dd, J 4.6, 7.5, 5'-H), 3.66-3.68 (2H, m, 3-H, 4-H), 3.70 (1H, dd, J 4.5, 11.5, 6'-Ha), 3.78 (1H, dd, J 7.5, 11.5, 6'-Hb), 3.83 (1H, d, J 3.2, 4'-H), 3.85-3.89 (2H, m, 2-H, 6-Ha), 3.94 (1H, dd, J 2.5, 12.3, 6-Hb), 4.41 (1H, d, J 7.5, 1'-H), 4.81 (1H, d, J 10.5, 1-H), 7.27-7.33 (3H, m, Ph), 7.50-7.52 (2H, m, Ph); .delta..sub.C (125.78 MHz; CD.sub.3 OD) 22.92 (CH.sub.3), 55.69 (2-C), 62.00 and 62.54 (2 CH.sub.2), 70.34, 72.60, 74.83, 75.59, 77.17, 80.52 and 80.67 (7 CH), 88.49 (1-C), 105.03 (1'-C), 128.31 (CH, Ph), 129.93 (2 CH, Ph), 132.32 (2 CH, Ph), 135.74 (C, Ph), 173.37 (CO); m/z (DCI) 476 (MH.sup.+, 5%), 366 [(M-SPh).sup.+, 36], 204 [(M-271).sup.+, 100].

ORPL:

Wong, C. et al., "Probing the Acceptor Specificity of  $\beta$ -1,4-Galactosyltransferase for the Development of Enzymatic Synthesis of Novel Oligosaccharides", J. Am. Chem. Soc., 113, 8137-8145 (1991).

US-PAT-NO: 5856082

DOCUMENT-IDENTIFIER: US 5856082 A

TITLE: Devices and methods for characterizing proteins and peptides

DATE-ISSUED: January 5, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Aebersold; Rudolf H.	Mercer Island	WA	N/A	N/A
Amankwa; Lawrence N.	Surrey	N/A	N/A	<u>GB3</u>

US-CL-CURRENT: 435/4,204/452 ,204/603 ,250/288 ,422/70 ,435/15 ,435/21 ,435/287.9 ,435/288.6 ,435/68.1 ,435/7.1 ,435/7.5 ,435/97

ABSTRACT:

The present invention provides analytical devices for the characterization of the primary structure of proteins and peptides, comprising a microenzyme reactor, a separation device, an interface between the microenzyme reactor and the separation device, a mass spectrometer, and an interface between the separation device and the mass spectrometer. Also provided are methods for characterizing a protein or peptide utilizing such devices.

42 Claims, 7 Drawing figures

Exemplary Claim Number: 22

Number of Drawing Sheets: 5

DATE FILED: August 31, 1994

----- KWIC -----

INCO:

GB3

DEPR:

In another embodiment of the present invention, the immobilized enzymes are enzymes which modify proteins or peptides by adding various groups to the protein or polypeptide. Such modifying enzymes include glycosylating enzymes that add sugar moieties (i.e., sugar-modifying enzymes such as galactosyltransferase, fucosyltransferase, sialyltransferase, and mannosyltransferase) and phosphorylating enzymes that add phosphate groups (i.e., various protein kinases).

DEPR:

A wide variety of enzymes may be used to assess glycosylation of proteins and peptides. Representative examples of enzymes which add glycosyl groups ("Modifying Enzymes") include N-acetylglucosaminyltransferase, galactosyltransferases, fucosyltransferase, sialyltransferase and mannosyltransferase. Representative examples of enzymes which remove glycosyl groups include glycosidases (endo and exo), galactosidase, fucosidase, sialidase, and mannosidase.



US-PAT-NO: 5756291

DOCUMENT-IDENTIFIER: US 5756291 A

TITLE: Aptamers specific for biomolecules and methods of making

DATE-ISSUED: May 26, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Griffin; Linda	Atherton	CA	N/A	N/A
Albrecht; Glenn	Redwood City	CA	N/A	N/A
Latham; John	Palo Alto	CA	N/A	N/A
Leung; Lawrence	Hillsborough	CA	N/A	N/A
Vermaas; Eric	Oakland	CA	N/A	N/A
Toole; John J.	Burlingame	CA	N/A	N/A

US-CL-CURRENT: 435/6,530/413 ,536/23.1

ABSTRACT:

A method for identifying oligomer sequences, optionally comprising modified base, which specifically bind target molecules such as serum proteins, kinins, eicosanoids and extracellular proteins is described. The method is used to generate aptamers that bind to serum Factor X, PDGF, FGF, ICAM, VCAM, E-selectin, thrombin, bradykinin, PGF2 and cell surface molecules. The technique involves complexation of the target molecule with a mixture of oligonucleotides containing random sequences and sequences which serve as primer for PCR under conditions wherein a complex is formed with the specifically binding sequences, but not with the other members of the oligonucleotide mixture. The complex is then separated from uncomplexed oligonucleotides and the complexed members of the oligonucleotide mixture are recovered from the separated complex using the polymerase chain reaction. The recovered oligonucleotides may be sequenced, and successive rounds of selection using complexation, separation, amplification and recovery can be employed. The oligonucleotides can be used for therapeutic and diagnostic purposes and for generating secondary aptamers.

12 Claims, 6 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 6

DATE FILED: June 7, 1995

----- KWIC -----

DETL:

protein CD13 Pan myeloid (CA++ mobilization) cell surface protein CD14  
Monocyte cell surface protein CD15 Hapten X (fucosyl N acetyllactosamine),  
granulocyte CD16 IgG Fc Receptor III, low affinity CDw17 Lactoceramide CD18  
chain of LFA-1, Mac 1, p150-95 CD19 Pan B, cell surface protein CD20 B cells,  
dendritic reticular cell surface protein CD21 B cells, dendritic cells, CR2  
(EBV Rc) Epstein Barr Virus Receptor CD22 B cell, cell surface protein CD23  
IgE Fc Receptor low affinity CD24 B cell, cell surface protein CD25 IL2  
Receptor CD26 Dipeptylpeptidase IV of activated T lymphocytes CD27 Mature T  
cell surface protein CD28 Tp44 Ag, T cells, plasma cell surface protein CD29

VLA Beta chain CD30 Activation antigen CD31 Myeloid Ag. gpIIa Antigen CD32 IgG Fc Receptor CD33 Pan myeloid cell surface protein CD34 Lymphoid and myeloid precursor cell surface protein CD35 CR1, granulocytes, monocytes, dendritic cell surface protein CD36 gpIV, thrombospondin receptor CD37 B cell, cell surface protein CD38 B & T cells and plasmocyte cell surface protein CD39 B cells, macrophages, endothelial cell surface protein CD40 B cells, El lymphocytes carcinoma (BLCA) cell surface protein CD41a gpIIb/IIIa CD41b gpIIb CD42a gpIX CD42b gpIb CD43 T cells, granulocytes, RBC, cell surface protein CD44 T cells, pre-B, granulocytes, cell surface protein CD45 Leukocyte common antigen (LCA) CD45Ra Restricted LCA, subset of CD4 + T cells CD45Rb Leukocyte cell surface protein CD45Ro Restricted LCA CD46 Membrane Cofactor Protein (MCP) CD47 N-linked glycan CD48 Leukocytes (PI-PLC linked) CDw49a a1 VLA chain CDw49b gpIIa1a, a2 VLA chain, collagen receptor CDw49c a3 VLA chain CDw49d a4 VLA chain CDw49e gpIc, a5 VLA chain CDw49f gpIIc1a, a6 VLA chain, laminin receptor CDw50 Leukocyte cell surface protein CD51 a chain vitronectin Rc (VNR) receptor CDw52 Campath-1, leukocyte cell surface protein CD53 Leukocyte cell surface protein CD54 ICAM-1 (Intracellular Adhesion Molecule), leukocytes CD55 DAF (Decay Accelerating Factor) CD56 N-CAM (NKH-1), Adhesion Molecule CD57 HNK1, Natural Killer cell surface protein CD58 Leukocyte functional antigen cell surface protein CD59 Leukocyte cell surface protein CDw60 Neu AC-Neu Gal, T lymphocytes subset CD61 gpIIa, VNR B chain, Integrin B3 CD62 GMP-140 (PADGEM) CD63 Activated platelet cell surface protein CD64 Fc receptor, monocytes CDw65 Fucoganglioside CD66 Granulocyte cell surface protein CD67 Granulocyte (PI linked) cell surface protein CD68 Macrophage cell surface protein CD69 Activation Inducer Molecule CDw70 Activated B & T cells, Reed Sternberg cell, cell surface protein CD71 Transferrin receptor CD72 Pan B cell surface protein CD73 Ecto5'Nucleotidase CD74 Class II associated invariant chain- CDw75 Mature B cell surface protein CD76 Mature B cells, T cell subset, granulocyte cell surface protein **CD77** Globotriaosylceramide (**Gb3**), Burkitt's lymphoma cell surface protein CDw78 Pan B (monocyte) cell surface protein ICAM-1 Thrombin Receptor ICAM-2 p-glycoprotein (MDR-1 gene product) LPAM-2 (MDR-2 gene product) VCAM-1 ELAM-1 T-cell receptor LAN-1 Histocompatibility antigens (Cell surface antigens) HLA-A1, HLA-A2, HLA-A3, HLA-A11, HLA-A23(9), HLA-A24(9), HLA-A25(10), HLA-A26(10), HLA-A29(w19), HLA-A30(w19), HLA-A31(w19), HLA-A32(w19), HLA-A33(w19), HLA-AW34(10), HLA-Aw36, HLA-Aw43, HLA-Aw66(10), HLA-Aw68(28), HLA-Aw69(28), HLA-Aw74(w19), HLA-Bw4(4a), HLA-Bw6(4b), HLA-B7, HLA-B8, HLA-B13, HLA-B18, HLA-B27, HLA-B35, HLA-B37, HLA-B38(16), HLA-B39(16), HLA-Bw41, HLA-Bw42, HLA-B44(12), HLA-B45(12), HLA-Bw46, HLA-Bw47, HLA-Bw48, HLA-B49(21), HLA-Bw50(21), HLA-B51(5), HLA-Bw52(5), HLA-Bw53, HLA-Bw54(22), HLA-Bw55(22), HLA-Bw56(22), HLA-Bw57(17), HLA-Bw58(17), HLA-Bw59, HLA-Bw60(40), HLA-Bw61(40), HLA-BW 62(15), HLA-Bw63(15), HLA-Bw64(14), HLA-Bw65(14), HLA-Bw67, HLA-Bw71(70), HLA-Bw72(70), HLA-Bw73, HLA-Bw75(15), HLA-Bw76(15), HLA-Bw77(15), HLA-Cw1, HLA-Cw2, HLA-Cw3, HLA-CW4, HLA-Cw5, HLA-Cw6, HLA-Cw1 HLA-Cw8, HLA-Cw9(3), HLA-Cw10(3), HLA-Cw11, HLA-Dw1, HLA-Dw2, HLA-Dw3, HLA-Dw4, HLA-Dw5, HLA-Dw8, HLA-Dw9, HLA-Dw10, HLA-Dw11(7), HLA-Dw12, HLA-Dw13, HLA-Dw14, HLA-Dw15, HLA-Dw16, HLA-Dw17(7), HLA-Dw18(6), HLA-Dw19(w6), HLA-Dw20, HLA-Dw21, HLA-Dw22, HLA-Dw23, HLA-Dw24, HLA-Dw25, HLA-Dw26, HLA-DR1, HLA-DR2, HLA-DR3, HLA-DR4, HLA-DR5, HLA-DRw6, HLA-DR7, HLA-DRw8, HLA-DR9, HLA-DRw10, Hnk-DRw11(5), HLA-DRWI2(5), HLA-DRW13(6), HLA-DRw14(6), HLA-DRWI5(2), HLA-DRw16(2), HLA-DRw17(3), HLA-DRw18(3), HLA-DRw52, HLA-DRw53, HLA-DQw1, HLA-DQw2, HLA-DQw3, HLA-DQw4, HLA-DQw5(w1), HLA-DQw6(w1), HLA-DQw7(w3), HLA-DQw8(w3), HLA-DQw9(w3), HLA-DPw1, HLA-DPw2,

HLA-DPw3, HLA-DPw4, HLA-DPw5, HLA-DPw6 Insulin receptor Insulin-like growth factor receptor Sodium/potassium ATPase Sodium/chloride cotransporter IL-1 receptor IL-3 receptor IL-4 receptor Parathyroid hormone receptor GnRH receptor CSF-M receptor CSF-GM receptor CSF-G receptor Erythropoietin receptor Complement receptor C1b receptor EGF receptor Follicle stimulating hormone receptor Follicle stimulating hormone releasing hormone receptor Growth hormone receptor Glucagon receptor Leutinizing hormone receptor Leutinizing hormone releasing hormone receptor Growth hormone releasing hormone receptor Nerve growth factor receptor Melanotropin release inhibiting hormone receptor Platelet derived growth factor receptor (alpha and beta) Fibroblast growth factor receptor (i and 2) Somatotropin release inhibiting hormone receptor Somatotropin releasing hormone receptor Thyrotropin receptor Thyrotropin releasing hormone receptor Tumor necrosis factor alpha receptor Tumor necrosis factor beta receptor Complement C3a receptor Complement C5a receptor Complement C3b receptor Complement CR2 receptor Complement CR3 receptor CSF-1 receptor GMCSF receptor SLF receptor flg oncogene protein c-ros oncogene protein erb-B2 oncogene protein trk-B oncogene protein trk oncogene protein c-fems oncogene protein c-kit oncogene protein erb-B oncogene protein HER-2/neu oncogene protein kit oncogene protein C. Virus and Bacterial Targets HIV-1/HIV-2 reverse transcriptase (including RNase H) protease integrase gag proteins (including p17, p24, p15) tat protein rev protein nef protein vif protein vpr protein vpu protein envelope proteins (including gp 120, gp41) HTLV-I/II gag proteins (including gp24, gp19, gp15) protease pol (including reverse transcriptase and RNase H) envelope genes (including gp46 and gp41) tax rex Human papillomaviruses E7 protein E6 protein E6\* protein E4 protein E1 proteins E1-E4 proteins E2 proteins capsid proteins (L1 and L2) Influenza A and B polymerase proteins (including PA, PB1, and PB2) hemagglutinin (HA) neuraminidase (NA) nucleoprotein (NP) M1 and M2 proteins NS1 and NS2 proteins Hepatitis B Envelope (surface antigen) P proteins (including pre-S1, pre-S2 and S) Nucleocapsid (core) proteins P-gene product X-gene product Cytomegalovirus Immediate early (alpha) gene products (including IE1 and IE2) Early (beta) gene products (including DNA pol p140, DBP52 EDBP 140) Late (gamma) structural gene products Herpes Simplex Virus thymidine kinase ribonucleotide reductase virus-encoded envelope glycoproteins Epstein-Barr Virus immediate early gene products (including ZLF1 protein and RLF1 protein) early gene products (including SMLF1, MRF1, ALF2, HRF1, ribonucleotide reductase, thymidine kinase [XLF1]) virus-encoded glycoproteins lipopolysaccharides (from gram negative or gram positive bacteria) botulinum toxin diphtheria toxin cholera toxin endotoxin D. Intracellular Targets (proteins/lipids/Enzymes Lipids fatty acids glycerides glycerylethers phospholipids sphingolipids steroids fat soluble vitamins glycolipid phospholipids lecithins phosphatidic acids (cephalins) sphingomyelin plasmalogens phosphatidyl inositol phosphatidyl choline phosphatidyl serine

#### DETL:

phosphatidyl inositol diphosphatidyl glycerol oleic palmitic stearic acids linoleic acid acylcoenzyme A phosphoglyceride phosphitidate retinoic acid retinoids lipoprotein A proteolipid sphingolipids sphingosine ceramides cerebrosides gangliosides sphingomyelins terpenes sesquiterpenes diterpenes triterpenes tetraterpenes steroids cholesterol cholesterol esters cholic acid phosphatidylcholine estrogen testosterone androgens 2-keto-3-deoxyoctanoate Intracellular proteins p53 pRB retinoblastoma gene

product) methemoglobin hemoglobin A hemoglobin A1 hemoglobin A2 hemoglobin  
 Barcelona hemoglobin Barts hemoglobin Beth Isreal hemoglobin Bunbury  
 hemoglobin Cochin-Port Royal hemoglobin Cowntown hemoglobin Cranston  
 hemoglobin Creteil hemoglobin D hemoglobin D-Los Angeles hemoglobin D-Punjab  
 hemoglobin F hemoglobin Gower hemoglobin Hammersmith hemoglobin Hiroshima  
 hemoglobin Indianapolis hemoglobin Kansas hemoglobin Kariya hemoglobin  
 Kempsey hemoglobin Kenya hemoglobin Lepore hemoglobin M hemoglobin M Hyde  
 Park hemoglobin M Iwate hemoglobin M Saskatoon hemoglobin Nancy hemoglobin  
 Philly hemoglobin Quong Sze hemoglobin Ranier hemoglobin Raleigh hemoglobin  
 S hemoglobin Sealy hemoglobin Seattle hemoglobin St. Louis hemoglobin St.  
 Mande hemoglobin Titusville hemoglobin Torino hemoglobin Wayne hemoglobin  
 York hemoglobin Zurich src oncogene protein abl oncogene protein met  
 oncogene protein Ha-ras oncogene protein Ki-ras oncogene protein N-ras  
 oncogene protein fps oncogene protein mos oncogene protein raf oncogene  
 protein pim oncogene protein crk oncogene protein db1 oncogene protein rel  
 oncogene protein yes oncogene protein fgr oncogene protein L-myc oncogene  
 protein int-1 oncogene protein ets oncogene protein bcl-2 oncogene protein  
 1-acylglycerol-3-phosphate acyltransferase 3-b-hydroxy-steroid  
 dehydrogenase(EC5.3.3.1) 3-hydroxybutyrate dehydrogenase 3-ketothiolase  
 5'-nucleotidase 8-oxoguanosine deglycosylase 11b-hydroxylase (EC 1.14.15:4)  
 18-hydroxylase 21-steroid hydroxylase(EC 1119910) 2,3-oxidosqualene  
 lanosterol cyclase 24,28-sterol reductase a-actin a-mannosidase a-melogenin  
 a-tubulin acetolactate synthase acetyl cholinesterase acetyl glucosaminyl  
 transferase acetyl spermine deactylase acetyl transacylase acetyl-CoA  
 carboxylase acetyl-CoA malate citrate synthase acid phosphatase acid  
 protease aconitase actin adenosine deaminase adenosylhomocysteine  
 hydrolase adenosylmethionine decarboxylase adenylate cydase adenylate  
 deaminase adenylate kinase adenylsuccinate lyase adenylsuccinate synthase  
 alanine aminotransferase alcohol dehydrogenase aldolase adose reductase  
 alkaline phosphatase amidophosphodibosylalanine transferase AMP  
 phosphodiesterase amyloid b/A4 protein amyloid precursor protein ankarin  
 arginase argininosuccinate lyase argininosuccinate synthetase aromatase  
 aryl sulfatase aspartate aminotransferase aspartate transcarbamoylase ATP  
 diphosphohydrolase ATPase b-actin b-glucuronidase b-glycerophosphatase  
 b-ketoacyl-ACP reductase b-ketoacyl-ACP sythetase b-spectrin b-tropomyosin  
 b-tubulin C5a inactivation factor calcitonin calmodulin calpain I  
 calreticulin carbamoyl-phosphate synthetase carbonic anhydrase casein kinase  
 1 casein kinase 2 catalase catechol methyltransferase cathepsin cathepsin  
 B and L cdc 2 p34 cdc 10 cdc 13 p60 cdc 25 p80 chaparonin cholesterol  
 esterase cholesterol monooxygenase citrate synthetase clathrin collagenase  
 connective tissue activating peptide core protein cortisol dehydrogenase  
 cyclin A and B cyclophilin cytidine deaminase cytidylate deaminase  
 cytochrome C peroxidase cytochrome P450 cytosine methyl transferase defensin  
 diacylglycerol acyltransferase dihydrofolate reductase dihydrouracil  
 dehydrogenase dihydroorotate dihydroorotate dehydrogenase dioxygenase  
 dopamine monooxygenase dynenin elastase elastin elongation factor Tu  
 endo-rhamosidase enolase enoyl-ACP hydratase enoyl-ACP reductase fatty acid  
 synthetase ferritin ferredoxin fructose bisphosphate aldolase fumarase  
 GABA aminotransferase galactosidase gelatinase gelsolin glucophosphate  
 isomerase glucosylceramide galactosyl transferase glutaminase glutamine  
 phosphoribosylpyrophosphate aminotransferase glycerol phosphate acyl  
 transferase glycerol phosphate dehydrogenase glycinamide ribonucleotide  
 transfomylase GTP binding protein heavy meromyosin hexokinase histaminase

histidine decarboxylase HSP 27 hydropyrimidine hydrokse hydroxy acyl CoA  
dehydrogenase hydroxy steroid dehydrogenase hydroxy-methylglutaryl CoA  
cleavage enzyme hydroxy-methylglutaryl CoA reductase hydroxy-methylglutaryl  
CoA synthetase hypoxanthine-guanine phosphoribosyl transferase IMP  
dehydrogenase indole lyase inositol phosphate phosphatase isocitrate lyase  
kinin generating enzyme lactate dehydrogenase lactoferrin laminin leukocyte  
elastase lipocortin lipoxygenase long chain fatty acid CoA ligase lysozyme  
major basic protein malate dehydrogenase malate synthase malonyl  
transacylase

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DOCUMENT-IDENTIFIER: US 5627271 A

TITLE: Glycolipids, their preparation and use

DATE-ISSUED: May 6, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Flitsch; Sabine L.	Oxford	N/A	N/A	GBX
Guilbert; Benedicte	Saint-Renan	N/A	N/A	FRX

US-CL-CURRENT: 536/18.5,424/94.5 ,435/193

ABSTRACT:

A process for preparing a glycolipid of formula (I): [(sac).sub.m+n ]--O--CH.sub.2 --CHX--CH(OQ)--Y wherein Q is H or a blocking group; X is N.sub.3 or NH.sub.2 ; Y is a lipid residue; each sac is a saccharide; and m and n are each integers; comprises reacting a corresponding glycolipid of formula (II): (sac).sub.n --O--CH.sub.2 --CHX--CH(OQ)--Y with the corresponding saccharide (sac).sub.m or a reactive derivative thereof, in the presence of an enzyme that catalyses the reaction. Compounds of formulae (I) and (II) are suitable for elaboration to a variety of saccharide ceramides.

13 Claims, 0 Drawing figures

Exemplary Claim Number: 1

DATE FILED: October 13, 1994

----- KWIC -----

BSPR:

The enzyme that is used in the invention is typically of the type that is known for the biosynthesis of N-linked sugars in glycoproteins. It is surprising that such known enzymes will also utilise glycolipids (II) as a substrate but, as is evident from the data herein, that is the case. Suitable sialyltransferases (.alpha.2-3 and .alpha.2-6) may be obtained from porcine or rat liver, and galactosyltransferase (from bovine milk, 2.4.1.22) and fucosyltransferase activity can also be used. Specific examples of enzymes that may be used are Gal.beta.1, 3GalNAc.alpha.2, 3-sialyltransferase (EC 2.4.99.4) and Gal.beta.1, 4GlcNAc.alpha.2, 6-sialyltransferase (EC 2.4.99.1).

DEPR:

The GlcNAc ceramide (40) has been tested as a substrate for the galactosyltransferase with and without the addition of the detergent Triton CF-54. No conversion was obtained. Thus (40), as opposed to (27), does not get galactosylated by the transferase.

DEPL:

Compound (28): The acceptor (27) (16.5 mg, 31.2 .mu.mol) was sonicated carefully for 15 min in 39 .mu.l of 40 mM MnCl.sub.2, 93 .mu.l of 50 mM NaN.sub.3, 102 .mu.l and 330 .mu.l of sodium cacodylate buffer pH 7.4 100 mM and 50 mM respectively. Then 35 .mu.l of 2% BSA, 5.5 .mu.l (5.5 U) of 1 U/.mu.l calf intestinal alkaline phosphatase, 143 .mu.l (1.92 U) of 6.7 U/500

. $\mu$ l UDP-Glc 4-epimerase, 29 . $\mu$ l (487 mU) of 8.4 U/500 . $\mu$ l **galactosyl-transferase** and 21.9 mg (37.9 . $\mu$ mol, 1.2 eq.) of UDP-Glc were added. The final concentrations were as follows: [Acceptor]=40 mM, [UDP-Glc]=49 mM, [MnCl.sub.2]=2 mM, [NaN.sub.3]=6 mM, [Sodium cacodylate]=50 mM.

DEPL:

Compound (41): The acceptor (39) was dissolved in 37.4 . $\mu$ l of 40 mM MnCl.sub.2, 90 . $\mu$ l of 50 mM NaN.sub.3, 133 . $\mu$ l and 481 . $\mu$ l of respectively 100 mM and 50 mM sodium cacodylate buffer pH 7.4. To the solution were added 0.7 mg of BSA, 20.7 mg (35.8 . $\mu$ mol) of UDP-Glc, 5.3 . $\mu$ l of CiAP (1 U/. $\mu$ l), 1.1 U of **galactosyltransferase** and 2.7 U of UDP-Glc 4-epimerase. The reaction mixture was incubated at 37.degree. C. for 24 h. The gel formed was loaded on a small reverse-phase column (Sorbisil C200 silica gel RP18, packed in methanol, washed with water). The column was washed with water and the product eluted with methanol. The organic fraction was reduced in vacuo leading to (41) as an amorphous powder contaminated with a trace of (39) (16.9 mg, 85%). M.S.(ES.sup.+):MH.sup.+ =664.

ORPL:

Nicolaou, K. et al. (1988) "A Practical and Enantioselective Synthesis of Glycosphingolipids and Related Compounds. Total Synthesis of **Globotriaosylceramide (GB3)**" J. Am. Chem. Soc., 110:7910-7912.